Industrial FINISHING

PUBLIC LIBRARY
FEB 3 1942
DETROIT

FEBRUARY— *The Birth Month of Two Great Americans*

THIS MONTH as we honor and pay tribute to these two great men, we, of the Advance Paint Company, renew our allegiance to the flag—

"WE PLEDGE allegiance to the flag of the United States of America and to the Republic for which it stands, one Nation, indivisible, with liberty and justice for all."

AND WITH this renewal pledge we dedicate our efforts and resources to help win the war . . . and also to help ***keep America going*** so that our boys will not have fought in vain.

ADVANCE PAINT COMPANY

Manufacturers of Wood & Metal Finishing Materials

INDIANAPOLIS, INDIANA

New Finish Air Dries in *50 SECONDS*

NOTHING short of maximum production speed will do *now* in getting out war supplies. That's why Roxalin's new Olive Drab finish (matching U. S. Army Color No. 22) is being so widely adopted by defense contractors.

This new material *air dries to handle in 50 seconds,* dries nail hard in only a few hours and possesses good resistance to corrosion (proved by accelerated salt spray and humidity tests). For spray application it may be reduced as much as one part of enamel to three parts of reducer, thus providing an extremely low ready to use cost.

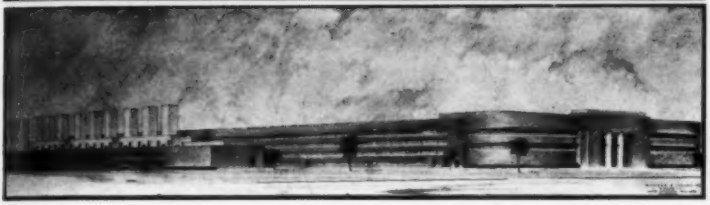
Write us and learn how this new Roxalin *50 second air dry* finish can speed up production of war supplies in your plant.

Write for file folder telling how and where to use U. S. Government Specification finishes.

ROXALIN FLEXIBLE LACQUER CO., INC.
Box 122 • Elizabeth, New Jersey

ROXALIN *Flexible* FINISHES

American Air Filters protect men, materials and machines in National Defense Plants

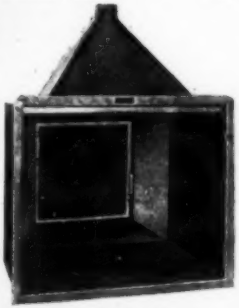


AIRMAT DRY FILTERS
For use in smaller drying rooms where drying time can be speeded up by bringing filtered warm air into contact with finished surfaces. Bulletin 230B.

Wherever Production Must Not Be Slowed Down by Dust, Smoke, Soot, and Fumes . . .

Wherever the countless war materiel is being made, clean air plays a vital roll in keeping production lines moving at unprecedented speed. AAF air filters and dust control equipment delivered to plants engaged directly in making war materials comprises approximately 92% of our output.

American Air Filters for protecting product finishing are available in many types from large automatic self-cleaning filters for finishing rooms to smaller unit filters for spray booths. Our engineering service is available without obligation.



SINUOUS SPRAY BOOTH FILTERS
Consists of cell and frame permanently attached to sheet metal frame at back of booth. Each cell has capacity of 1500 c.f.m.

AMERICAN AIR FILTER CO., INC.
Incorporated
251 CENTRAL AVENUE
LOUISVILLE, KY.

In Canada: Darling Bros., Ltd., Montreal, P. Q.

AAF

AMERICAN AUTOMATIC FILTER
For large drying room ventilation to protect finish and accelerate drying. Bulletin 240C.

AMERICAN AIR FILTERS
FOR PROTECTING PRODUCT FINISHING

NOT FOR THE FINISHER!

EACH NEW DAY means new problems for the finisher. Skill, ingenuity, hard work on an unprecedented scale are called for to meet our country's needs. They're necessary too to help solve the problems—headaches if you will—that each round of the clock brings to manufacturers. At Zapon, we're putting in long, strenuous hours, taxing our experience to the utmost, to help alleviate or banish the troubles of users of finishes.

We have already solved many problems—putting to good use materials still available, making a little go a long way here, suggesting a new schedule there. We have found willing and intelligent cooperation by users of finishes, cheerfulness in yielding on many details and pleasure in being able to secure an adequate coating despite the times.

With life on a 24-hour schedule for most of us, one problem solved is often followed by another new set of troubles. That's an additional reason why an alert, progressive policy of getting together on finishing programs will help a lot—you don't know what's coming next.

ZAPON

ZAPON DIVISION · ATLAS POWDER COMPANY

Eastern Sales: Stamford, Conn. Western Sales: North Chicago, Ill.

INDUSTRIAL FINISHES

Equipment Review Section Beginning Page 20

Industrial FINISHING

Reg. U. S. Pat. Office

Published Monthly in the Interest of Modern Production Finishing

Vol. XVIII, No. 4 **FEBRUARY, 1942** **$2.00 a Year**

Contents of This Issue

Letters from Readers of Industrial Finishing 4
At the January Furniture Market 14
A Review of Equipment for the Finishing Room 20
Spray Painting Equipment Plays Important Role in War Industries 47
Using Infra-Red Baking More Effectively and More Economically 50
How We Doubled Our Finishing Capacity Without Increasing Our Floor Space 54
Blackout with Paint, But Select It and Use It Intelligently 68
Recover Used Solvents and Relieve Another Bottleneck in Industry 82
New Materials, Supplies, Equipment 88
Questions; Answers 92
Editorial 108
Buyers' Classified Directory 114
"Classified Advertising" Section 119
Index to Advertisers 120

Watson-Standard Appoints New Chicago Representative 19
Despatch Oven Co. Appoints Chicago Representative 49
Instruments You May Need 49
Conveyors Help Speed Operations 53
Oakite Expands Service Facilities 66
Oven Heat Cleans Steel Surfaces 78
Fast-Drying Varnishes 80
Shell Painting Bulletin 80
Despatch Appoints Representative in Missouri 80
Infra-Red Baking at Westinghouse 84
New York Woodfinishers' Supply Co. Appoints Southern Man 86
Bulletins on Rust Preventative and Chemical Resistant Paints 90
Fire Retardant Paint 94
To Remove Scratches on Glass 97
Improved Color Scheme for Machinery 97
Conveyors Streamline Production Layouts 99
Breakfast Suite Finish 101
Antique Reproduction in Furniture 102
M. S. A. Opens New Canadian Headquarters 112
Infra-Red Equipment and Service 112
Sherwin-Williams Adopts Returnable Drums 113
Soybean Oil Specifications 113

Owned and Published by

Practical Publications, Inc., 1142 North Meridian Street, Indianapolis, Ind.

Eastern Representative: C. A. Larson, 254 West 31st Street, New York City; Phone Penna. 6-9049

Letters from Readers...

OF INDUSTRIAL FINISHING

These letters (and many others) were answered recently by the editorial department, but are published here to reveal certain interesting trends of desire and activity in the industry, and to encourage additional inquiries, comments and suggestions. Further information about any of them can be obtained by writing this office.—Editor.

Name Transfers

I would like to get in touch with someone who can supply name transfers for the various makes of pianos. —C. E. K.

We are referring you to some of the manufacturers of decalcomanias (decal transfers).—Ed.

Rust-Proof Coating

I manufacture gauge pins for printing presses. Until recently I have had the pins nickel plated. Since the shortage of nickel I have used the blue finish as sample shows.

This finish is not satisfactory as, under certain conditions, the pin will rust.

Mr. H. W. Ker of your city called upon us a few days ago and suggested that I write you, as you could advise a better finish than what we are now using.—C. L. S.

Information furnished.—Ed.

Coats Small Items Quickly in Large Volume

We read your January 1942 issue from cover to cover and want you to know that we find it contains a lot of interesting and useful information.

The illustration and caption that appeared on page 40 is of particular interest to us. We refer to the method of finishing and drying buckles by the Welker Mfg. Co. of Cromwell, Conn. The caption states that they now dry 1500 buckles every two minutes without "lacquer blushing" or sticking. However, no mention is made of the quantity of material used per ton of buckles.

By the use of our Speedip Whirl Enameler we are able to lacquer one ton of buckles with one gallon of finishing material. Our enameler will coat 5000 small buckles every two minutes and, without any forced drying or handling, they can be packed within five minutes.

Only one operator is required—the man who places the buckles in the basket, which is placed in the Speedip Whirl Enameler and then dipped into the pail of finishing material within the machine and whirl dried in less than a minute. There is no loss of excess material, gums or solvents. The operator then removes the basket and dumps its contents on a tray. This is a continuous operation and leaves the product thoroughly coated with all excess material removed and no sticking whatsoever.—F. Ronci.

Nail-hole Putty

We have a problem on which we believe you can help us. We are having difficulty in the use of putty, where we putty up nail holes on natural birch. The difficulty is that within three or four months after the job is installed, our putty turns black. Can you give us any information as to the proper type of putty to use

Apologies *in* Advance

WE CAN SEE it coming—the time when "normal business" will be seriously curtailed because of raw material shortages in our own lines. If you are doing Defense Work on which our materials are being used, please notify us at once and take steps to have your priorities extended to cover such items AT ONCE.

We urge all regular users to anticipate their normal first-quarter needs and give specific quantities and shipping dates IMMEDIATELY. All such orders will be filled in their relative proportion to the percent of materials we receive.

V. J. DOLAN & COMPANY, INC.

Mnfrs. of "Unquestionable Quality" Industrial Finishes

1830 N. LARAMIE AVE. CHICAGO, ILLINOIS

FOR DEFENSE!

1,000—1" Buckles Lacquered per minute.

500—Large Cartridge Clips coated per minute

with R 200

"SPEEDIP"

WHIRL ENAMELER and Coating Machine

No Waste in Time or Materials

A combination dipping - whirling machine for completely coating large quantities of small parts with lacquer, enamel, paint, oil, wax, etc. • All operations are within the machine. Parts are dipped into coating material, raised and whirled. Time—as little as 30 seconds. Speeds up production—cuts finishing costs—saves coating materials. • Write for further details or send samples to be coated.

R 200

RONCI MACHINE CO.

45 River Ave., Providence, R. I.

for Defense Finishing use

UNITED'S DEFENDER LINE

Defense products often require specially formulated protective coatings to meet the exacting conditions of wear, tear and abuse which they will receive in actual use. United's chemists have developed the DEFENDER LINE of protective coatings to meet the extraordinary specifications and requirements of defense products. If you have a production finishing problem on priority rated products you will find a quick solution among UNITED'S DEFENDER Line of protective coatings.

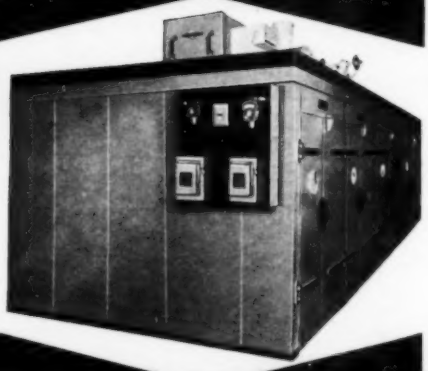
Send us your specifications and requirements—working samples and complete information will be sent promptly.

LACQUERS
THINNERS
ENAMELS
METALIZED FINISHES
SYNTHETICS

UNITED LACQUER MFG. CORP.
General Offices and Factory: Linden, New Jersey
New England Mfg. Division: Boston, Mass.

STANDARD SIZES FOR PROMPT DELIVERY

GKS Baking Ovens*



Standardized parts enable GKS to produce and deliver ovens faster and add standard units to increase capacity to meet any requirement.

Write, wire or phone your needs.

*DRYING, TOO!

GEORGE KOCH SONS, INC. Evansville, Ind.

under lacquer, possibly some information as to how this putty should be mixed.—R. Fixture Mfg. Co.

A number of putties or nail-hole fillers, made especially for this purpose, are on the market and we are sending you names and addresses of the manufacturers.—Ed.

Paint Can Shaker

Would you kindly give us your listings on the manufacturers of a "Paint Shaker" better known as a "Paint Conditioner," similar to the one manufactured by the Red Devil Co. of Irvington, N. J.? We are interested in a shaker that will take care of one and two gallon paint containers. —C. J. Co. (Fine Paints and Varnishes).

Information supplied.—Ed.

Molders of Wood Flour Composition

In your January 1942 issue, page 12, the C. I. Co. requests information on molders of wood flour composition. We are happy to say that we do this work, and would be pleased to have you forward the information to the company named above.—The Geo. S. Scott Mfg. Co., Plantsville, Conn.

Will you please send us the name of the concern that inquired about products made from molded wood flour, the C. I. Co., on page 12 of the January 1942 issue? One of our customers, we believe, is in a position to handle additional business along this line and would like to contact this concern as soon as possible.—The Monroe Sander Corp.

Aluminum Paint

Will you please let us know who carries aluminum paint? We have a customer who wants about 10 gallons. —B. C. Co.

Unbleached Cheesecloth or Tobacco Cloth

We would be pleased to know whether you could furnish us with the names and addresses of firms manufacturing or supplying unbleached cheesecloth. We have been getting it until recently from eastern mills, but now that source of supply has closed. The writer accidentally came across

THERE IS

NO SHORTAGE

OF

FLOCKS

and No Advance in Prices

Profitable Use of . . .

COTTON—WOOL—RAYON

FLOCKS

is being made by the smart industrial finishing departments everywhere. A spray coating of Flocks lends charm, attraction and utility to otherwise drab items—increasing both sales and profits.

Have you tried it? . . .

Write for free color card and samples.

CLAREMONT WASTE MFG. CO.

CLAREMONT, N. H.

The country's leading makers of Cotton, Wool and Rayon Flocks

FINISHING ROOM FOREMEN

. . turn out better work faster with SEA-LAC . . . every shipment is *pre-tested* for assured satisfaction . . . every Finish is designed for streamlined production.

Primers • Sealers • Lacquers
Baking Synthetics

Tell us your finishing schedule and requirements for samples and full information about the *best* SEA-LAC Finish for *your* job.

WAR ORDERS PROMPTLY FILLED

SEA-LAC

the *perfected* Finish

Duralac Chemical Corp.
84-92 Lister Avenue Newark, N. J.

your publication, INDUSTRIAL FINISHING, and was quite impressed by it. We believe it can be the medium of a vast potential buying readership, dependent, of course, upon our ability to secure cloth.

We will very much appreciate your sending us advertising rates and whatever information you can, relative to cheesecloth or tobacco cloth. —W. G. Co. (Tack Rags).

Roller Coating Machines

I would appreciate your furnishing me with names of manufacturers of roller coating machines.—P. W. M. (Flock Printing).

Waterproofing for Fish Baits

Can you give us any information on the waterproofing of wood to be used for fishing baits, or give us the name of a manufacturer who might supply such materials?—N. H. Co.

We have given this manufacturer some information on this subject, but would appreciate suggestions and recommendations from readers.—ED.

Luminous Paints

We are interested in luminous paints, and as we have had no experience whatsoever with this product, we wondered if you would be kind enough to forward to us the names of the manufacturers of this material.—L. Mfg. Co. (Labels, Seals, Name Plates).

Information given.—ED.

Heat-Resisting Paints

Will you please inform us the source of heat-resisting paints? We notice this inquiry on page 4 of your December issue.—T. & N. Mfg. Co. (Wooden Novelties).

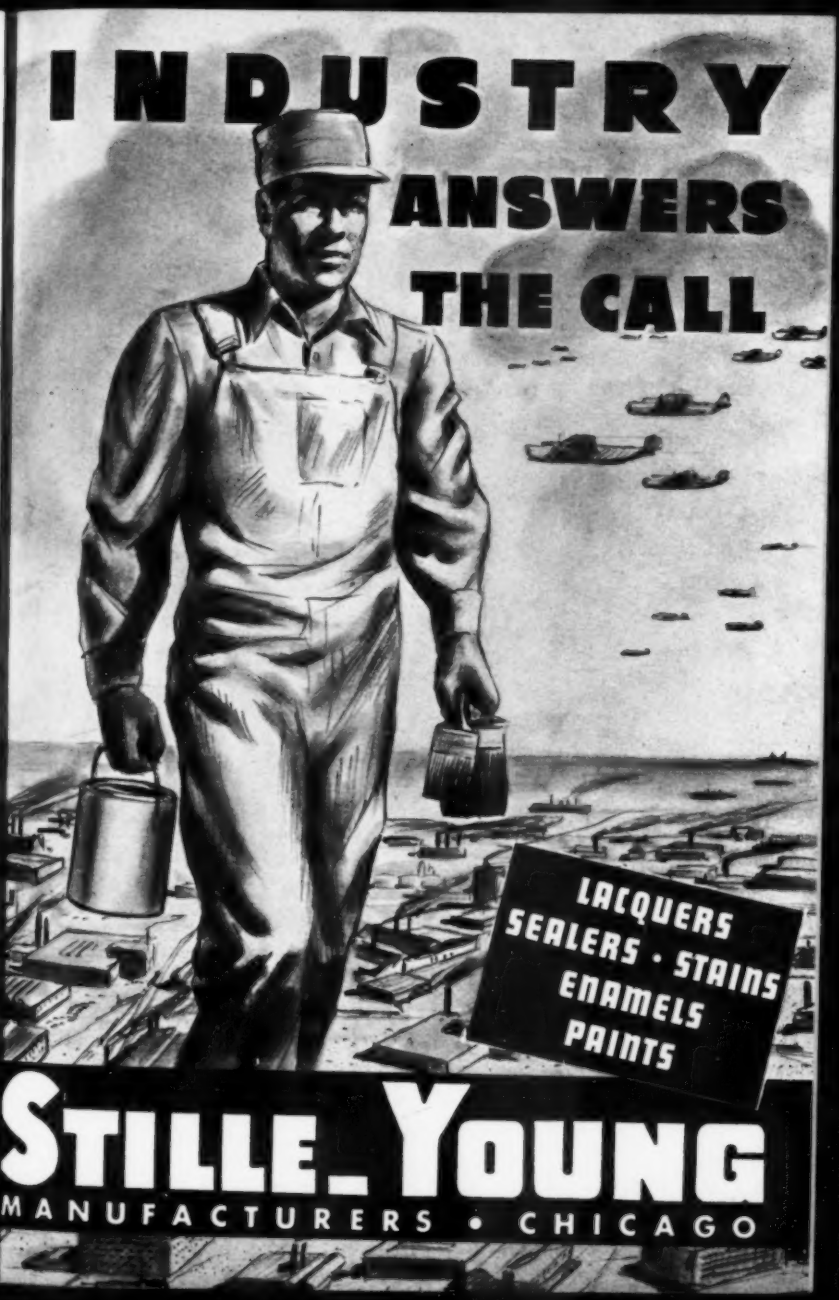
Information given.—ED.

Finishing Small Pieces of Hardwood

In the near future we expect to be finishing small pieces in red enamel, the pieces being of various shapes and sizes. Dipping or spraying would be too expensive.

Could you give us any information on tumbling small parts? Have you

(Continued on page 103)


INDUSTRY
ANSWERS
THE CALL
LACQUERS
SEALERS • STAINS
ENAMELS
PAINTS
STILLE-YOUNG
MANUFACTURERS • CHICAGO

BEEYOOTIFUL!

They proved that at Wake and Midway Islands. Their job is to **protect** America—and they do it well. Organic finishing materials also have a job and they too do it well. Their job is to **protect** the equipment and implements of war, used not only by the Marines, but by all of our armed forces. It is also the job of protective coatings, like Paint, Varnish, Lacquer, Enamel, etc., to protect machinery, equipment, accessories and buildings in

THE LILLY COMPANY

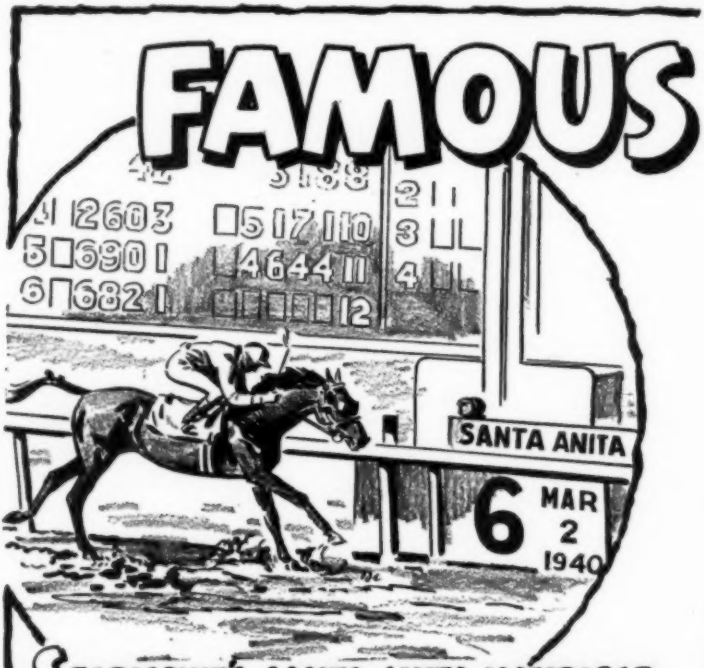
HIGH POINT, N. C.

-BUT TOUGH!

which these implements of war are being produced. Just as the Marines proved that our confidence in them is not misplaced when we depend on them for protection, so also can you depend on LILLY'S PROTECTIVE COATINGS, for we have been making such coatings for 77 years. This is our (Lilly Varnish Company) fourth war experience for we were born in war (1865) . . . . . have survived two others and are now in this one.

LILLY VARNISH COMPANY

INDIANAPOLIS, IND.



SEABISCUIT'S SANTA ANITA HANDICAP

MARCH 2, 1940 ~ AFTER LOSING THE PREVIOUS TWO SANTA ANITA HANDICAPS BY PHOTO-FINISHES, ***SEABISCUIT*** TRAILS THE BIG FIELD BY A DOZEN LENGTHS GOING INTO THE BACK STRETCH. THEN, RUNNING OVER HORSES, THIS STOUT-HEARTED, IRON HORSE, WITH COURAGE THAT COULD NOT BE DENIED, GETS TO THE LEADERS IN THE STRETCH AND WINS IN THE FINAL STRIDES. THIS ***FAMOUS FINISH*** BRINGS HIS TOTAL WINNINGS TO $437,730, A NEW WORLD'S RECORD.

PITTSBURGH

FINISHES

THE PITTSBURGH MAN IS ALWAYS THERE WITH THE FINISH THAT FITS YOUR PROBLEM!

WITH THE BACKING OF AN ORGANIZATION OF TECHNICAL EXPERTS, YOUR PITTSBURGH MAN IS EQUIPPED TO FIND THE RIGHT ANSWER FOR YOUR TOUGH FINISHING PROBLEMS.

AGAIN AND AGAIN, THESE HIGHLY-TRAINED MEN HAVE PROVED THEIR ABILITY TO DEVELOP THE CORRECT FINISH FOR PRACTICALLY EVERY PHASE OF DEFENSE PRODUCTION .... WHETHER THIS FINISH BE FOR TANKS, SUBMARINES, AIRPLANES OR TYPEWRITERS!

A PHONE CALL, WIRE OR LETTER WILL BRING A PITTSBURGH REPRESENTATIVE FOR CONSULTATION

PITTSBURGH PLATE GLASS COMPANY
INDUSTRIAL PAINT DIVISION • PITTSBURGH, PA.

Industrial FINISHES

At the January Furniture

BY RUTH HAMMOND

Style Authority, Advertising Manager and Director of Public Relations for the American Furniture Mart.

REFLECTING the spirit of a confident America, new lines on display at the winter national home furnishings market at the American Furniture Mart, Chicago, Jan. 5 to 17 were bright with color and designed with an eye to both gaiety and comfort, war's drab grimness to the contrary notwithstanding.

War in any country usually results in a certain amount of recklessness on the part of the civilian population. Treatment given the samples displayed by manufacturers at the Chicago show, however, was anything but reckless. The industry has realized that the conflict in progress is bound to have a major influence on how and where this country's citizens live, and it has produced furniture and home furnishings designed to meet the needs of the public tomorrow.

Defense housing projects, for example, are already having an important effect on certain lines. Some 90,000 units have been built or are expected to be completed before March 1. During 1942 the government plans to put up approximately 125,000 more of such homes, and private builders it is

The Author

Mahogany Tables. Notice leather top on round cocktail table.

Market

Photographs, courtesy of American Furniture Mart

Right: A mirrored drawer compartment in the vanity and a glass-shelved night table are outstanding features of this bleached mahogany modern bedroom suite. The wood drawer pulls have brass trim. The lamps have wooden bases.

Left: A modern ensemble from the wishmaker. The salmon-colored chairs are upholstered in velvet with tufted seat and back. The table is in bleached mahogany.

thought, will construct between three to four times that many units this year.

A Defense-Home Style Type

Low cost, well styled furniture and furnishings of all types for these defense housing units are enjoying a demand which is already on the increase. Check-ups reveal that industrial workers, who are migrating to defense production projects from all parts of the country and who will be chief occupants of these housing units, are seldom bringing their furniture with them. A rough guess is that perhaps 50% or more of the half million units will require complete furnishing and equipping. The government is furnishing only dormitories for single men.

Most of these defense houses are comparatively small and compact. The average wage of the defense worker is about $50 a week. Man-

ufacturers who have studied these data have been quick to realize that inquiries are going to be increasingly active for furniture of functional design, constructed to meet the needs of the small home.

Bleached Finishes Popular

Limed oak, bleached mahogany, pin-striped walnut, birch and bleached maple were prominent in most functional groupings. Bright Pennsylvania Dutch was featured by many exhibitors. Wood and glass combinations in occasional tables constituted a definite contribution to the movement toward a distinct type of American styling. A new museum finish on mahogany gave an antique appearance to a number of featured furniture items.

American Fashions To Fore

Colorful motifs were in evidence in many suites and groupings. In fact there are distinct signs of a trend-toward a definite new American era in design. Many of this country's furniture designers and manufacturers seem to sense that they have it within their power to make America the world's furniture fashion center. Indications are that furniture produced in the future will retain the good points of European styling, but that American individuality will come much more strongly to the fore.

The top of this handsome mahogany cocktail table is covered with tooled leather.

Among the unusual new treatments noted were blue, green and red lacquers on commodes, a painted Pennsylvania Dutch motif on cedar chests, tooled leather tops on occasional tables and fronts on chifforobes, sparkling floral decorations on case goods, brilliant flowers and geometric designs in floor coverings, and fabrics of all descriptions in unusual and artistic color combinations.

Leading the new style trend were the lamp lines. Finishing materials enjoyed almost revolutionary treatments. Ceramics and crystal were in evidence on bases, which were in some instances reproductions of old, familiar American objects. Worthy of mention was the fact that practically all lamp lines exhibited were produced without using essential metals except for the actual electric wiring and fixtures.

Industry Outlook Favorable

With the furniture and home furnishings trade now the unquestioned leader in the durable goods field, due to the 100% change-over to war manufacturing in the automobile business, general opinion was that the industry's outlook is comparatively rose-tinted.

Dr. James F. Bogardus, OPA, speaking before the American furniture Mart Press Club during the market, said that he thought the

industry has "a remarkably bright future as compared with most other industries in this country, particularly the wood furniture industry, which does not compete with the defense industry to any extent, insofar as raw materials are concerned."

Discussing prospects, he said, "there is no reason at all why the industry cannot continue at substantially the present level, or possibly increase that level somewhat."

Price increases on furniture, he said, have been almost entirely the result of increased raw material costs. Manufacturers, it was indicated during the market, have themselves absorbed various increases in labor and raw material costs. A virtual stabilization of prices for the next six months is looked for in the industry.

Arms Program Benefits Trade

Lawrence H. Whiting, president of the American Furniture Mart, feels that higher farm incomes, and increased buying power of a large part of the general public due to the nation's armament program, will result in definite benefits to the furniture and home furnishings industry.

"A curtailment in the buying of automobiles and other durable goods using considerable amounts of metal will undoubtedly benefit the industry," he declared.

As part of the trade's contribution to the country's defense effort, research is now in progress, he pointed out, on the use of laminated woods in airplane construction, with a view to developing substitutes for essential metals now in use on transport planes.

"To date the government has been able to utilize approximately 27% of the industry's equipment for defense production," he said, "and further use of furniture manufacturers' facilities is in prospect."

A modern secretary of bleached walnut. The chair is upholstered in cherry red with white stalk leaves, an outgrowth of the campaign to make homes more colorful.

Despite the chary use of vital metals and other essential materials, decorative appointments such as drawer pulls and door handles did not suffer. Wood, glass and various other substitutes were used freely and with unusual effect, so that in many instances the absent metals were scracely missed. Efforts of lamp manufacturers in eliminating copper, iron, brass, bronze and other metals from their production schedules were outstanding.

Shortages Have Varied Effects

Numerous other effects of various material shortages were in evidence at the market. Substitutes for jute, wool, brass, burlap, glue, rubber and lacquer have al-

This "corner desk" combines beauty with utility, especially for the small home. The desk is made of bleached birch with plastic pulls. The chair is also of birch upholstered in a shell-pink fabric. The lamp is one of a new series combining baroque with modern motif and is finished in gold and white.

ready been developed in some cases, and work is being done, according to manufacturers on many others.

One outstanding development was the new use which has been found for reproductions of natural graining, etc. This treatment was to be found on Peruvian modern lamp bases in snakeskin finishes, and on lamp shades, in a woven mat-like duplication. The effect obtained was so realistic that it was difficult to distinguish the original Mexican mat, which was used as a model, from the reproduction. The lamps on which this finish was used were among the standout features of the market.

Many problems have arisen out of the material shortages situation brought on by the defense program, but they appear to have been solved so successfully in many instances that the substitutes are improvements on the original materials.

No shortage of wood, which is naturally a prime essential in furniture manufacturing, is in prospect, and for this the industry is duly thankful. Inventories of foreign woods on hand are said to be substantial. Production of wood veneers was up during 1941.

Indications were that the government realizes the importance of keeping furniture available in maintaining civilian morale, and also the importance of keeping materials available for maintaining furniture manufacturing activities. The importance of maintaining civilian morale was emphasized numerous times by industrial leaders as well as federal officials who were among the speakers at various market meetings.

Major home appliance manufacturers indicated a desire to maintain dealer contacts despite the sharp restrictions in their output, caused by the defense program. Many of these manufacturers have converted their plants to armament construction to such an extent that the lines they offer are necessarily greatly reduced. Dealers, for this reason, crowded the Mart's appliance floor throughout the opening week of the market to see what merchandise was on display and place orders for whatever they could purchase under their quota allowances. Many adjustments in the appliance industry will of necessity have to be made, but during the market manufacturers seemed chiefly interested only in continuing promotional and advertising programs despite their restricted production schedules.

New Materials in Appliances

New materials for use in construction of appliances are already being tried as a result of research directed at developing substitutes for critical substances formerly in use in the field, and manufacturers, with a thoughtful eye to the future, are planning to maintain their sales organizations and distribution set-ups whenever it is possible for them to do so.

The present trend in commercial refrigerator construction and design requires a synthetic exterior finish that will stand up against various sorts of hard usage and under varying humidity conditions. Many concerns in the refrigerator industry have adopted the use of a high bake, synthetic enamel, generally white, but varying in color from eggshell to black. Methods of application and the actual cost of the materials used, make this finish considerably less expensive than vitreous enamel.

New brass question mark pulls complete the modern treatment of this bleached mahogany bedroom grouping, with rosewood inlay. Chair is upholstered in chartreuse green.

Cobalt, one of the materials used in making porcelain enamel, is on the critical list, and reports indicate it is becoming scarcer daily. Only a relatively small amount is used in enamel making, but if supplies are cut off, manufacturers may be forced to turn to some other type of finish.

Indications are that there will be some curtailment in the production of console radios, but it was thought that the government, realizing the importance of the radio in maintaining civilian morale, will go to considerable lengths to keep an ample supply of small radios available.

Functional modern was a popular style note in many displays. Furniture that is adaptable to living room, bedroom or dining room appears to be a "must" on the home furnishing list of the small home owner, and manufacturers are aware of this development in consumer preference.

Watson-Standard Appoints New Chicago Representative

The Technical Coatings Division of Watson-Standard Co., Pittsburgh, Penna., announces a new Chicago Industrial Representative—Mr. Robert Lewis of No. 6 N. Hamlin Ave.; telephone Van Buren 2800. The company also states that their New York City Technical Representative, Mr. Raymond Swan, has moved from 126 Lexington Ave., to No. 2 Lafayette St.; telephone, WOrth 2-0415.

a Review of Equipment

WITH OUR COUNTRY actively engaged in war on many battlefronts, production equipment of all kinds is in demand and in service for the manufacture of a great variety of products for war and defense. More speed and greater output are necessary to produce the tremendous quantities of Victory products needed by ourselves and our allies.

Naturally, the equipment for manufacturing war goods includes facilities for cleaning, smoothing and treating surfaces to be coated; for applying and drying protective and concealment coatings; and for adding to some of these coatings certain markings that are important. As many operations as possible must be made automatic, and what can't be made completely automatic must be made partly automatic wherever this is practicable. Mechanical handling equipment is definitely essential in the war production setup.

Many machines originally designed for such individual operations as cleaning surfaces, applying coatings, and drying coatings have now become merely parts or units in a continuous compact assembly of equipment that performs all of these operations more or less automatically in a short length of time. The manual labor for operation often involves only "feeders" at the entrance and "offbearers" at the exits — workers who can be unfit or unwanted for military service.

Above all else, this productive equipment must be as nearly as possible trouble-free, safe and dependable in the face of adverse conditions. Much of it is called upon to operate continuously and at full capacity—frequently under inexperienced or inadequate supervision.

Many designs have had to be changed to meet these new conditions and requirements. In some cases alternate materials have had to be substituted in certain parts of the con-

for the Finishing Room

struction. Developments in equipment, therefore have been influenced accordingly. Remarkable resourcefulness and ingenuity have been shown by manufacturers in fitting their equipment successfully into this new picture.

Essential civilian goods, notably furniture, continue to be manufactured—and here too, labor-saving equipment is in service and in demand. Shortages in available labor and numerous materials have had their effects, making some equipment obsolete and other equipment practically a necessity. Full automatic coating equipment, conveyorization, and facilities for more rapid drying of protective and decorative coatings have been extensively adopted in establishments that manufacture civilian products—and we can look for more of this in the future.

Graining Over Contours

The Graining Roller Co. announces development of a veneer composition to fill a need for those who do graining over a contour. Heretofore, a gelatine soft enough to make the coverage over a contour did not have the necessary durability for production work. Also, it would spread the grain, especially a lengthwise one.

This new material has a thin, tough outer skin with a thick base of sponge composition which enables it to "flow" over the work, making contact everywhere—much in the same manner as the knee action on an automobile. On louvers and beading it will give coverage on all but the very point of the grooves, doing the work without a perceptible spread in the grain. The outer covering is especially designed to make a sharp print, and brings out more detail than the older types of gelatine.

This material is not theoretical. It has proved its merit over a year of one of the toughest production schedules—that of graining the instrument panels on automobiles whose contours are as varied as those found on almost any other article that is grained.

Equipment necessary to manufacture rollers of this type is highly specialized, much of it was unobtainable and had to be designed and built by the Graining Roller Co.

A graining roller differs from a roller used for printing in that it makes the impression, whereas in printing the type or plate makes the impression. At least two, and sometimes four rollers are used in inking a plate so that any imperfections in one are covered up by the others. On the other hand, in graining, one roller must make the entire impression and it must be absolutely perfect, for any mar on it would show up in the finished product, unless touched up. Touch-up work involves time and labor, therefore it is costly.

Materials differ too. The printing roller is fed ink by a fountain or

platen and then distributes it on the type. However, a graining roller must have the ability to pick the ink up out of the grooves of the plate and then lay it down on the ground coat so as to give every detail. This is apparent in taking a proof of a plate on paper. Much more detail will show up, because the paper is absorbent and will take the ink off the roller more readily than the ground coat will.—Graining Roller Co.

Cabinet, Shelf and Truck Type Ovens

In reference to improvements on industrial ovens, George Koch Sons, Inc., writes briefly as follows:

"1941 saw further improvements made in the GKS line of standard cabinet and truck-type ovens, as well as the development of a new line of ovens known as GKS shelf ovens.

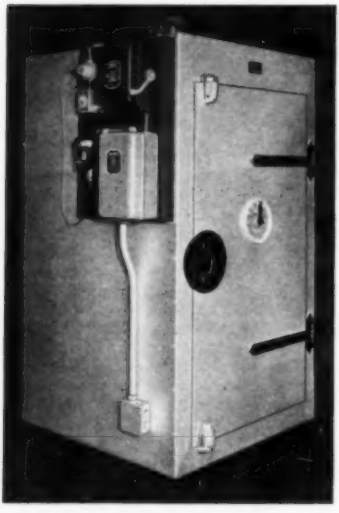
"All GKS ovens are assembled from standard units so George Koch Sons, Inc. can promise purchasers prompt delivery and the economical dependable performance of the standard units. All ovens are pre-assembled and tested at the plant to insure complete satisfaction; they come completely equipped with all necessary safety and control equipment.

"One of the smallest GKS standard cabinet ovens is mounted on an angle-iron stand to raise the level of the unit to normal working height.

"Another cabinet oven is mounted on a cabinet stand. Useful and attractive, complete with removable shelves and double doors, the built-in cabinet provides convenient storage space.

"GKS standard cabinet ovens are designed to operate by gas or electricity; automatically controlled to operate in a range of temperature between 150 and 550° F. They come in a 'Standard' series, and a 'Deluxe' series with additional advantages of cross flow circulation, closer temperature control and additional safety equipment. Cabinet ovens are shipped completely assembled, ready to operate after connection to the source of power.

"Shelf ovens are heated by gas or electricity and operate in several temperature ranges between 150 and 550° F. They were designed to fill the needs of industries that demanded a self-contained unit larger than the GKS cabinet ovens."—George Koch Sons, Inc.

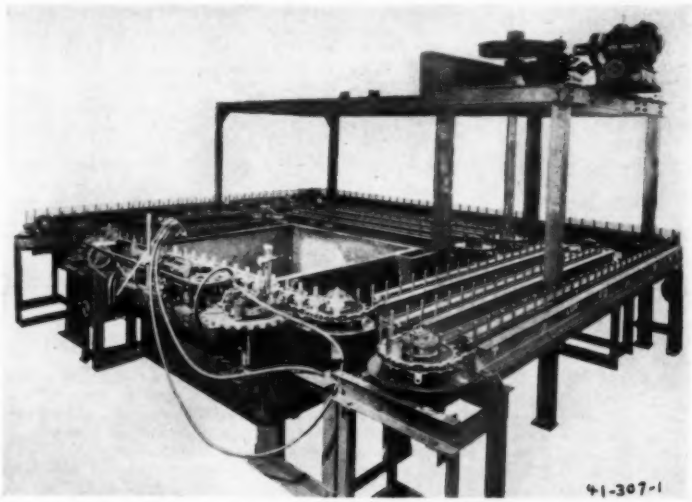


One of the larger of the seven standard sizes of GKS cabinet shelf ovens.

Top-Entering Mixer Has V-Belt Drive

Announcement of a new V-belt drive top-entering mixer extends the many advantages of this type of drive to top-entering mixers for the first time. Their development will permit an even greater use of top-entering propeller-type mixers. The new unit can be provided for use over open tanks, closed tanks, pressure or vacuum vessels and for attachment to standard size nozzles. It can also be provided for indoor or outdoor installations.

It provides welcome flexibility of drive. The speed can be changed



Cutaway view showing arrangement of conveyor for spray-painting shells. The drive unit is mounted overhead. Photograph furnished through courtesy of the Binks Mfg. Co.

merely by changing the sheave and pulleys, or a variable-speed pulley can be provided on the motor which allows approximately 25% speed variation. This permits the user to adjust his speed to just the right agitation or, if the viscosity is increased due to change in specifications of materials, the speed can be decreased so as not to overload the motor. Since the speed can be varied from 400 to 600-r.p.m., this drive is suitable only for propeller-type impellers and not for turbines.

The V-belt drive on these mixers can be furnished with electrically-conducting belts to do away with danger from static electricity in hazardous locations. It can also be furnished with oil-resisting belts where necessary.

Delivery time is less because a standard horizontal Nema frame motor is used instead of a gear motor. Motors can be standard, semi-enclosed, drip proof or totally enclosed, air-jacketed or explosion-proof, as required for service. The V-belt feature permits interchange with processors' own motor and enables purchaser to use mixer for a considerable number of different processes.

Shafts and impellers are selected and varied according to the materials being mixed and can be made from any machineable metal or alloy. Units range in size from 1 to 25-h.p. and may be mounted in any desired fashion on any size or shaped tank in minimum time. — Mixing Equipment Co., Inc.

Speed-Bloc Sander

Here is a portable air-driven single-block machine for sanding under-coats dry or wet; feathering out damaged places for repair painting or finishing; rubbing top coats with rubbing compound; and many other operations formerly performed by slow laborious hand work. It weighs only 5¼-lbs.; measures 7-in. long, 4¾-in. high and

3¾-in. wide; and has a ⅝-in. stroke. The top is shaped to provide a comfortable but secure hold for the operator.

The machine operates on 50 to 60-lbs. of air, using about 6-cu.ft. per minute under load. Approximate speed at 60-lbs. air pressure is 3000 strokes per minute. Due to the unusual construction of the rubber composition sanding pad, it is extremely flexible. This permits the working of curved as well as flat surfaces.

Can be used on small or large surfaces—flat or curved, level or vertical—sanding dry or wet.

The machine has a water connection with openings on each side, providing an adequate flow of water over the surface being sanded. For sanding with naphtha and benzine, special blocks are available.

A standard sheet of abrasive paper is cut in three pieces, each 3 2/3x 9-in. without waste. Loading the pad is very simple; from one to six pieces of abrasive paper or cloth may be applied at one loading. As each piece becomes worn, the operator tears it off.

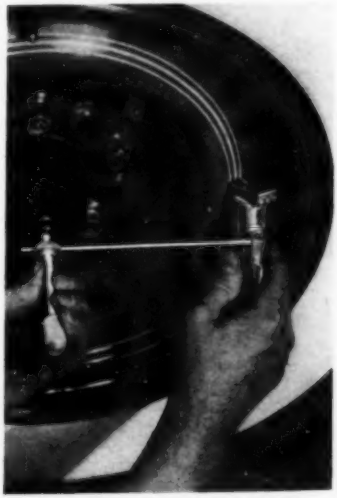
The air motor is compact and ruggedly constructed. It is sensitive and reacts quickly to changes in manual pressure, yet it is so powerful that the operator cannot stall it by hand pressure. The cam, flywheel and connecting rod are supported on double shielded ball bearings. All moving parts are of alloy steel hardened and ground.

An air screen is installed in the inlet of the sander for the purpose of trapping any particles that might become detached from the inner wall of the air hose. The design provides a maximum of screen space, thus offering a minimum of resistance to air. The screen can be easily cleaned.—Sterling Tool Products Co.

3-Wheel Striper

A new type of 3-wheel striping tool for use in automobile striping and identification striping, as well as for use in striping numerous other products, is illustrated here.

The striping kit includes a special attachment for holding the tool in position for striping disc wheels. The threaded stud fits into the center hole



Wheel striper in action, wheel jacked up.

3-wheel striper and attachment

of the axle. The guide rod is inserted into one of the holes of the stud and locked with the finger nut; the other end of the guide-rod attaches to the striper barrel. The striper wheel head has a 45° swivel slot which allows the wheel head to be turned to contact the curvature of the surface being striped.

The wheel head, while complicated in appearance, is quite simple in construction and is easily cleaned. To overcome any irregularity in the surface of products, the center wheel is constructed so as to float into low spots and over high spots, thus assuring an unbroken stripe by all three wheels.

While the illustration shows the 3-wheel head, the standard "Beugler" Jumbo, single or double-wheel heads will fit the barrel, or the smaller wheel heads can be used with an adapter to fit the barrel. This arrangement has been provided to make possible the use of this tool for applying single or double stripes in both the large and small widths, as needed.

In striping for identification the entire kit may not be needed; any part can be purchased separately, the wheel heads, the barrel and plunger, or the automobile-wheel attachment. —Beugler Mfg. Co.

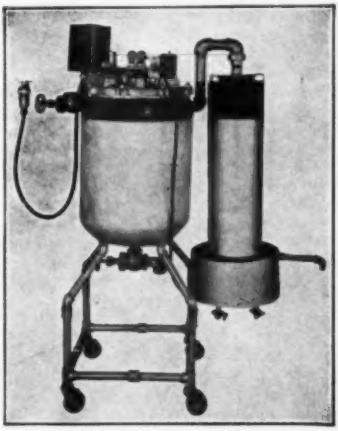
Portable Still Recovers Solvents

Here is an electrically-operated and controled, fully automatic, air-cooled portable still and condenser designed for full recovery of chlorinated solvents (used principally in vapor-type degreasers) in industrial plants.

Principal feature of these stills is that all heaters and controls are mounted integrally on the easily removed pot head, assuring easy cleaning and servicing, as well as easy access to the pot with no fixed fittings on the interior to trap solids.

In operation the still is plugged into a grounded-circuit receptacle, and dirty solvent is then pumped or poured into the pot. A sealed float switch indicates by green pilot lamp when the pot is full, and automatically energizes the heaters and starts the cooling fan on the condenser tower. When the liquid level drops to a point just above the heater, the float switch cuts off the heater and pilot lamp until a new charge of dirty solvent is placed in the pot.

When the oil residues reach a predetermined specific gravity and temperature, indicating a 98% to 99% solvent recovery, the heater is deenergized, and a red pilot lamp sig-



Worth investigating if you can use it.

nals the operator to dump the residue before again filling the pot.

The collector chamber of the condenser tower is fitted with a moisture trap to insure removal of water which may be in solution with dirty batches, and the clean solvent discharge pipe is at a level permitting draining into a standard drum lying on the floor.

The still just described produces 15 gallons per hour, operating on single or 3-phase, 220 or 440 volts, 60 cycles A. C. It is classified under maintenance equipment priority rules. Larger capacity stills in various sizes are also manufactured, operating under the same principles.

The unit is constructed to recover perchlorethylene, and can be modified to recover carbon tetrachloride and tri-clorethylene.—Phillips Mfg. Co.

Machines for Spray Painting Incendiary Bombs

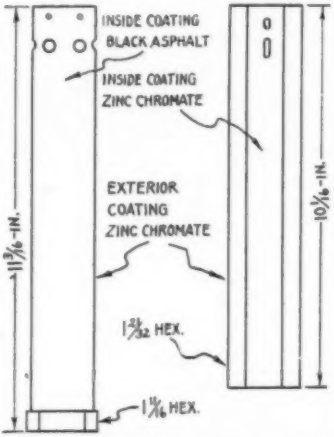
Two spray machines have been developed for painting type AN-M-54 4-lb. incendiary bombs. One coats the interior and exterior surfaces of the empty body compartments before loading and assembly. The other sprays the outside of the completely assembled, loaded bombs.

Bomb Components—The body of this bomb consists of two parts—a cylindrical tube which contains the charge (Case "A") and a tail, hexagonal tail assembly (Case "B") which contains the detonating mechanism. After these metal parts are made, but before they are sent to an ordnance plant for loading and assembly, both their interior and exterior surfaces must be painted. Case "A" is coated on the inside with acid-resist black and on the outside with zinc-chromate primer. Case "B" is coated inside and out with the primer only.

Machine for painting Bomb Components—The machine that paints the two parts of the bomb body consists of a fully automatic spray station for exterior painting, one or two semi-automatic spray stations for interior painting, and a chain-on-edge spindle-type conveyor.

After the cases are placed on the workholders of this machine, they move into the first spray station where, as they are rotated, their exterior surfaces are automatically painted. Then, without stopping, they pass over a section of the conveyor, which is sufficiently long to provide a 5-minute drying period.

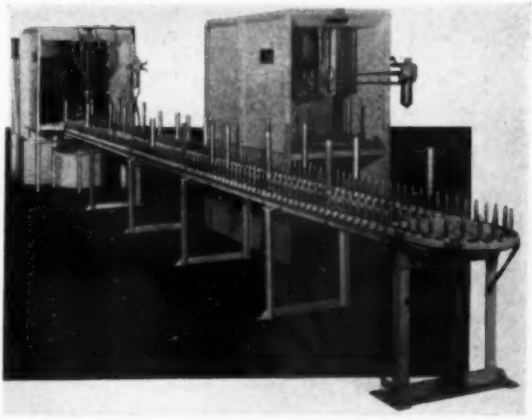
A production rate of 2000 pieces per hour is maintained when the machine has a conveyor length of 25-ft. and



Bomb nose and body assembly (at left) and bomb tail (at right) which are later joined by the end of the cylindrical tube fitting into the end of the hexagon tube, the final assembly making a 4-lb. M54, incendiary bomb.

is provided with two semi-automatic spray stations for interior painting. A production capacity of 1000 units per hour is obtained by the elimination of one semi-automatic spray station and by a suitable reduction in the speed and length of the conveyor. A production rate of 600 pieces per hour is secured by a still further reduction in the conveyor's speed and length.

Machine for Painting Assembled, Loaded Bombs — The machine that paints the completely assembled, loaded bombs consists of two fully automatic spray stations located at oppo-



This Machine paints both inside and outside of two parts of the bomb body. Station at the far end of the conveyor automatically coats the exterior of parts. Stations to the foreground and right (one on each side of the spray booth) are for the semi-automatic-coating of interior of the parts.

site ends of a chain-on-edge spindle-type conveyor.

At its loading station, the bombs are placed, loaded-end down, in the work-holders on the conveyor which, moving continuously, carries them through the first spray station where, as they are rotated, their tail assemblies are automatically coated with blue-gray lacquer enamel to a point just below the joint, near the safety pin. Masks are used to keep these safety pins free of paint.

After passing out of the first spray station, the bombs move over a section of the conveyor which is sufficiently long to provide a 5-minute drying period. Then, when fully dry, they arrive at the inverting station where they are removed from the workholders and reinserted downside up.

Next, the bombs pass through the second spray station where the loaded ends are coated with the same blue-grey lacquer enamel, also to a point just below the joint. Thus the joint receives two coats.

Then the bombs move out of the second spray station over another section of the conveyor which is also sufficiently long to permit the ends to dry before they reach the unloading station. At the unloading station, the completely painted bombs are removed from the machine and are ready for stenciling or marking operations.

Two standard models of this machine are offered. One of them has a production rate of 1,260 pieces per hour and is 41-ft. 4½-in. long overall. The other turns out 630 units every hour and has an overall length of 28-ft.—The DeVilbiss Co.

The Pre-Fabricated R-C Infra-Red Panels

The pre-fabricated R-C (radiation and convection) oven combines the thermal advantages of radiation and convection. All vital parts are placed outside the heating zone. Ovens of various sizes and shapes can be constructed from complete units made up in interlocking panels. Quoting from the company's literature:

"The industrial application of infra-red is made complete in every detail with the R-C oven. All components, including enclosure, ventilation, lamps, reflectors, controls, etc., are properly coordinated by competent engineers to assure the desired heating results for each application. The high heat output of 1000-watt infra-

red lamps, Mazda made for R-C ovens, produces faster results which correspondingly reduce oven space requirements. Varying shapes and sizes of products offer no obstacle to the three dimensional heat control afforded by the ribbed reflector construction. The enclosed telescope-mirror type reflect-

Interlocking panels, construction details.

or, provides unexcelled reflection qualities and has an almost negligible depreciation rate throughout life. Our reflectors, formerly gold-plated, have been superceded by this model because of vastly superior performance.

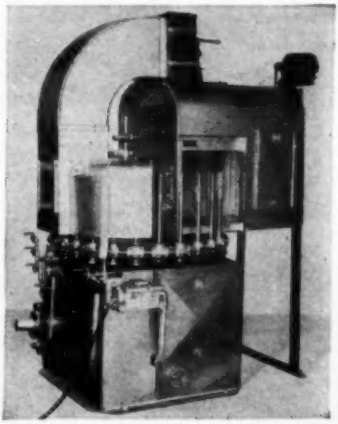
"Ovens may be designed for any operating temperature and extensive flexibility is afforded by the simplicity of electrical control, which may be designed for any customary industrial voltage. With enclosed lamps and the entire electrical system outside the oven, complete safety is afforded with proper ventilation and electrical interlock features.

"Uniform atmosphere conditions are an essential feature of any oven. R-C ovens, with down-draft ventilation, entirely eliminate non-uniform heating from air stratification. Pocketing of vapors is similarly avoided. All parts are accessible from outside the oven enclosure. Inspection is possible at a glance. The fully enclosed construction provides added convection efficiency, assuring upward of 25% additional output for a given heat capacity. The exclusive 360° optical control increases infra-red output."—C. M. Hall Lamp Co.

Sprays Small Shells

An automatic spray machine to coat and dry the outsides of small shells (20 to 40-mm.), gernades, shot, or boosters.

The machine consists of an automatic turntable on which the pieces are carried on indexed spindles to a position in front of automatic spray guns in a booth equipped with exhaust fan. After being coated, the pieces go through a small oven opposite the spray booth. A unit heater with blow-



A compact automatic production machine.

er fan insures rapid drying so that the pieces can be removed manually as they emerge from the oven.

The whole unit is very compact, taking a floor space of only 4-ft.x4-ft., and working parts are enclosed whereever possible to keep down maintenance costs.—Eclipse Air Brush Co.

Improved Baking Ovens

The following letter from Despatch Oven Co. calls attention to some interesting oven developments:

"We are pleased to direct your attention to the streamlined oven which is shown on the cover of our Bulletin

No. 51. At the time this was installed, it was, to our knowledge, the first streamlined industrial oven in the country. Since the original installation, we have increased the size of the unit and the addition was not streamlined like the original oven so it does not look as nice today. However, as far as operating efficiency is concerned, it is just as good, and Allison Engineering are proud of it.

"We have made modifications in our Despatch direct gas-fired air heaters, which have improved the construction and which makes them even more the ideal finish baking oven units than they were a few years ago.

"On some finish applications, like black synthetic for switch boxes, direct oil-fired heater units have been used successfully. These units are described in Bulletin No. 73.

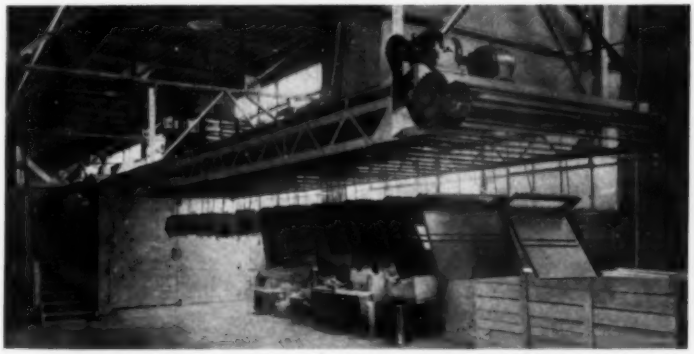
"The intermittent conveyor oven shown in the bulletin is an ideal unit for those who have a limited floor space but who desire a large production. . . ."

Dustrid Mask

A letter from Allergy & Medical Products, Inc., states that:

"All ordinary masks that keep the filtering pad away from the nose and mouth depend on two surfaces holding a filter pad between them. Our new type Dustrid Mask has only one frame holding the filter away from the nose and mouth. This enables the Dustrid Mask to have a very large breathing area and at the same time permits the mask to be very light in weight. The Dustrid Mask weighs only ½-oz. This mask is comfortable, permits wearing goggles, and all its component parts are replaceable.

"The Dustrid Mask is easy to use and has practically its entire area composed of breathing space."



This oven is used for the baking of finishes on air-conditioning units and similar products manufactured by McQuay, Inc., Minneapolis, Minn. The unit has capacity for a maximum gross load of 3000-lbs., with an average processing time of one hour. Inside dimensions of oven are 8-ft. wide, 25-ft. long and 7-ft. high.

The oven is heated with a Despatch controlled combustion direct gas-fired heater, which provides a maximum oven temperature of 300° F. Oven is the intermittent conveyor type; conveyor enters and leaves oven directly above door. Parts to be processed are hung from cross rods.

Vertical air circulation is used, and oven is equipped with a full automatic temperature control and safety system, as approved by Fire Underwriters. Photograph, courtesy of Despatch Oven Co.

Inside-Silvered Carbon-Filament Lamps for Infra-Red Drying

These lamps are the carbon filament type . . . the type of lamp that has produced outstanding results for infra-red drying. They have been especially developed for infra-red ray processes. The red-ray emanation from the carbon filament falls in the more desirable band of the Angstrom scale for maximum drying efficiency. The pure polished silver in the base end of the lamp acts as a reflector to project the infra-red rays toward the surface being worked on and eliminates the need for separate reflectors. This provides certain features of simplicity in setting up a drying installation.

Inside-silvered carbon filament lamp

Lamps of this type are mounted in portable drying units and in strips which can be used individually or assembled into banks of various sizes and shapes.—North American Electric Lamp Co.

Air-Driven Mixers

Two propeller-type mixers, the AR-25 and AR-33, incorporate air-driven motors and represent the first units with this type of propulsion offered by the Mixing Equipment Co.

The turbine-type air motor used in these two mixers is especially designed for agitator duty with built-in muffler for quiet operation and features a low rate of air consumption. The mixers are built for operation at air pressures of from 60 to 120-lbs. with the optimum operating range between 70 and 90-lbs.

Other features of these air-driven models include a quick removable shaft for ease in cleaning—adjustable shaft length for various sizes of containers—and sturdy construction with extra ball-bearing to remove any whip-load from the motor bearing. A universal clamp permits the mixer to be used at any angle in a tank. This provides complete control over the mixing action including: intentional vortexing, mild swirl, or rapid bottom to top turnover.

The mixers will attach to any container or vessel. A complete line of accessories, various types of impellers, support brackets, etc., are available for special applications, while a full range of metals and alloys for shafts and propellers permits use in any liquid.

These air-driven mixers are not designed to supplant electric driven

New air-motored propeller-type mixer.

models. In certain applications, though, they do possess definite advantages. An air motor is totally enclosed and non-sparking, thus eliminating hazards from this source; and it can not be burned out by overloading.

The initial cost of an air-driven mixer is about the same or slightly less than an electrically-driven mixer with a semi-enclosed motor. If the comparison is made between an air mixer and an electric mixer with explosion-proof motor, the first cost of the air driven model is much less. Operating cost of the electric mixer is, however, lower due to the cost of producing an adequate supply of compressed air.

In an air-driven mixer a throttle permits varying speeds to match each mixing operation. In actual use the speed of the air driven motor will also vary with the load and with variations in air pressure, a definite advantage in some cases.

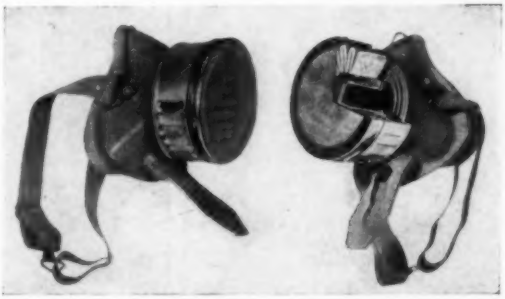
The "Lightnin" AR-25 operates at 1750-r.p.m. A 36-in. shaft with 3-in. propeller is standard. Weight is 26-lbs. The AR-33 has the lower operating speed of 400-r.p.m. and comes equipped with a standard 26-in. shaft. Propeller size is 7-in. Weight of the complete mixer is 29-lbs. — Mixing Equipment Co., Inc.

New "MSD" Respirator

A new respirator that affords maximum protection against the inhalation of dust and which is approved by the U. S. Bureau of Mines, embodies nine unique features. These combined, make it more compact, lighter, easier to breathe through, more comfortable to wear, and easier to clean and maintain than previous models.

In the new respirator, a scientifically and compactly designed cartridge, measuring only 2⅞ by 1½-in. and weighing but 1-oz., actually provides more than 41-sq.-in. of breathing and filtering area. Ingenious multi-vane construction allows every inch of this filter to be used efficiently. This means no air restriction to cause difficulty in breathing — plus greatly increased filtering efficiency.

The new respirator is designed to fit closely and without leakage, the contour of practically any face.—The DeVilbiss Co.



Roller Coater Speeds Paint Coating

A new, quick method of coating metal sheets with paint is made possible with a new roller coater machine, Model SPO. It applies a uniform coating of any desired thickness to the sheet, and requires no further touching up.

The machine is designed with a coating roll and a mating doctor roll. They operate to minimize "snaking" or "treeing" due to transferring from roll to roll before final application to the sheet, and also hold evaporation to a minimum due to the fact that there is much less exposed coating roll surface in motion. This type of unit is also reported to cut cleaning time over the transfer coating unit.

The coating roll core is made of steel tubing, with steel end flanges and trunions welded in the end. A durable composition cushion cover forms the applying surface. The trough for holding the coating mater-

ial is the crotch formed between the coating roll and doctor roll. It is sealed at the ends by end-seal plates; when cleaning, these plates can be easily lifted off by hand.

The main drive is through a "varispeed motodrive", a gear reducer unit and a 3:1 ratio variable-speed unit built into a compact enclosed housing.

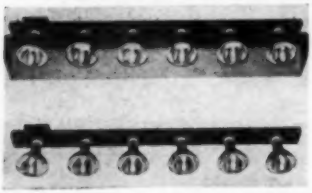
Adjustments of the Model SPO roller coater are all of the screw type. Dial indicators, fitted in each of the adjustment hand wheels, quickly enable the operator to set the machine to any desired adjustment. Accessibility for quick removal, replacement or adjustment of any part has been provided for. Cleaning, preparatory to color changing, takes only a few minutes. A patented overriding clutch is built in the doctor roll as a protection for the cushion covering on the coating roll. It provides a positive drive for the doctor roll and also permits it to be carried at the faster surface speed of the coating roll, should actual contact be made. The speed of the roller coater is variable, from 20 to 60-ft. per minute.—Chas E. Francis Co.

Infra-Red Strips for Quick Drying

Infra-red drying strips are designed for use with R40 internal reflector drying lamps and are available in various lengths and lamp spacings to meet individual specifications for heat requirements governing any area to be heated or baked.

Strips are made with minimum lamp spacings of 5½-in. on center for applications requiring intense heat, to spacings of 10-in. on center where only a moderate amount of radiated heat is required.

These strips are standard in lengths up to 8-ft. and are furnished wired complete for either 105 to 125 volts or 210 to 250 volts. A junction box mounted in rear of strip facilitates connection to outside circuits. Complete banks or tunnels—fixed, adjustable or portable—can be furnished to customer specifications. — The Op-Al Electric & Mfg. Co.



Available in many sizes and lamp spacings.

Portable Electric Sander

An electrically driven single-pad machine suitable for a variety of sanding and rubbing operations is shown in the accompanying illustration. It has a reciprocating motion and is designed and built to meet the gruelling service of 2 and 3-shift duty demanded today by the defense industries.

Easy to handle and control; operates wherever electric light current is available.

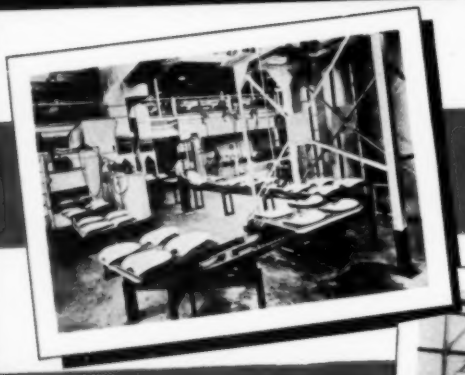
The new model Easy XL embodies numerous improvements. Vibration has been reduced to a minimum through precision balancing and redesign of handle mountings. An interchangeable front handle, which can be shifted from front to side position, enables the operator to work into close corners, at right angles and directly against vertical surfaces.

An improved type fan and baffle plate increase the flow of air through

(Continued on page 37)

Working Together
to Win the War

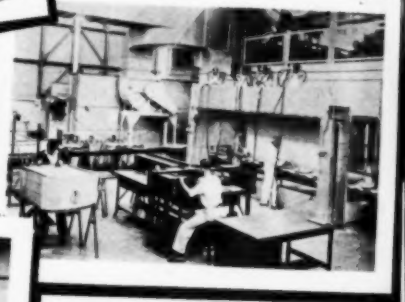
These are but a few



Finishing airplane seats with special Binks equipment in large plane plant.

Binks spray booths are so efficient that desk work can be done a few feet away.

Binks down-draft spray booth for finishing equipment in a U. S. Arsenal.

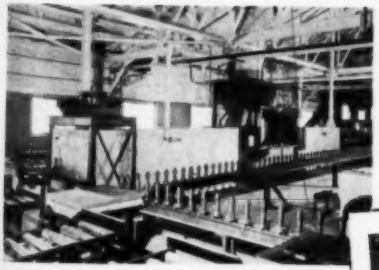


Binks painting equipment and exhaust system in large machine tool company.

These are but a few of the hundreds of BINKS spray painting installations that are contributing to America's war efforts. The photographs shown here are a few of the more obvious defense installations — the finishing of planes, shells, heavy machinery and tanks. Most of these installations involved special problems . . . the development of tailor-made equipment to meet certain specifications.

Not shown are the countless BINKS installations in industries "behind the scenes" — those supplying cans for foodstuffs, small tools and parts, housing, porcelain enamel pots and pans, sanitary facilities, furniture, and the innumerable other items that contribute so much to ultimate victory.

◀ Gigantic spray booth designed and built by Binks for finishing war planes.



▲ Heavy castings and parts are easily sprayed in Binks tailor-made booths.

▲ This Binks automatic equipment coats 1,000 shells an hour in an Ordnance plant.

Binks spray guns, tanks, regulators and hose serve gigantic airplane industry. ▶

Working Together to Win the War

To every industry devoting its efforts directly or indirectly to the production of war goods, the Binks Manufacturing Company pledges its every resource and facility for the manufacture of spray painting and allied equipment.

If you are shifting your production from a peacetime to a wartime basis, BINKS will be glad to help you adapt your finishing department to its new tasks. If you are building a new plant or expanding your old one, BINKS will welcome the opportunity to cooperate with you in the design and equipment of your finishing department for maximum efficiency and economy.

Although the war is still young, BINKS has already obtained a highly diversified experience in the finishing of war goods. BINKS equipment is being widely used for finishing shells, bombs, fighter planes, tanks, artillery trucks, machine tools and an infinite variety of other equipment essential to win the war.

There is a BINKS engineer within easy reach of you — no matter where your plant is located. If you have a finishing problem, large or small, he will gladly make a survey of your plant and give you specific recommendations without obligation. If you do not already have one . . .

SEND FOR BINKS COMPLETE CATALOG-DATA BOOK TODAY.

BINKS MANUFACTURING COMPANY

3114-3140 CARROLL AVENUE • CHICAGO, ILLINOIS

NEW YORK - DETROIT - SAN FRANCISCO - PHILADELPHIA - PITTSBURGH - CLEVELAND

ST. LOUIS - MILWAUKEE - BOSTON - LOS ANGELES SEATTLE - WINDSOR, ONTARIO, CANADA

(Continued from page 32)

the motor, insuring adequate cooling. The motor, filter and switch are now readily accessible through use of a new type motor filter cap. These machines are available with 110 or 220-volt motors.

The Model XL is designed and built to deliver maximum efficiency and performance on every finishing application—sanding, rubbing, polishing—on metal, plastics, wood, leather or composition materials. — The Detroit Surfacing Machine Co.

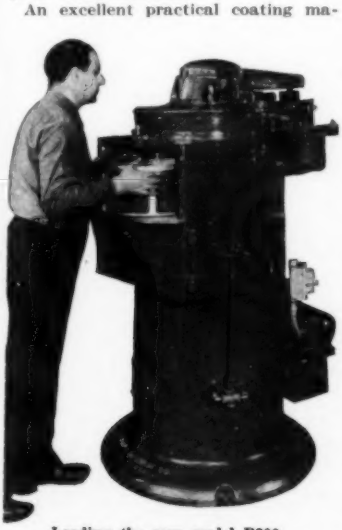
Speedip Whirl Enameler

Here is a combination dipping-whirling machine for completely coating large quantities of small parts with lacquer, enamel, paint or any other liquid finishing material.

"By having the material enclosed in the machine, there is very little evaporation and there is always a solvent atmosphere which is necessary in order to get the proper leveling on the parts being coated."

An excellent practical coating machine for lacquering and enameling small wood, metal, fiber and composition parts. All operations are within the machine. The work basket is lined with steel mesh wire. It is 16-in. in diameter; 6-in. deep and has a capacity of 1206-cu. in.

The mechanical door is of the sliding type and closes automatically. A ½-hp. explosive-proof motor spins the work. A 1/3-hp. explosive-proof motor operates the hydraulic lift which raises and lowers the work basket. Allowing time for loading and unloading, 20 to 25 complete operations per hour is a good average.—Ronci Machine Co.



Loading the new model R200.

Detroit "Tac" Rag

"We manufacture the Detroit Handy 'Tac' Rags, an absolute necessity in all finishing work. Many large aircraft plants are now using our Detroit 'Tac' in all finishing work. Detroit 'Tac' has also been on the market for the past five years and has proved to be one of the outstanding products of its kind. The main reasons for the outstanding success of this 'Tac' are that it will remain soft and tacky indefinitely and does not support combustion, thereby making it spontaneous combustion proof."—Philco Specialties Co.

Hydro-Foam Dust Collector Removes Fire Hazard

In burring and grinding operations on magnesium alloys, the danger from fire is an ever present menace unless suitable precautions are taken for its prevention. Dust and chips from magnesium alloys are highly inflammable and should be wetted as quickly as possible after being formed. All such grinding work should be done on a bench which is properly hooded and ventilated for the protection of the operator.

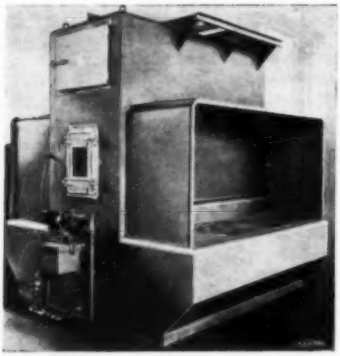
The Mahon hydro-foam dust collector—developed to collect, under water, various dusts formed by industrial processes—is ideally adapted to the collection of dust and chips formed

in the burring and grinding of magnesium alloy castings.

For this kind of work a special hydro-foam dust collector has been designed. It is a completely self-contained unit, providing in one machine both bench and hood, together with adequate dust-collection and ventilation facilities.

The tank, forming the base of the unit, is filled with water, kept at a constant level, and supplied with water service to make up for small evaporation losses. The side extension of this tank forms the bench which has for its surface a wooden grill. The hood formed above the grill confines the operations and dust therefrom is drawn through this grill onto the surface of the water, directly underneath.

In this first stage of dust elimination, the larger chips and coarser dust particles settle by gravity to the bottom of the tank. The air, still carrying a considerable volume of dust, is then forced downward at high velocity against the water in the tank. This second elimination stage forces the bulk of the remaining dust into the water. The impinging action of this operation aerates the water and creates a bed of spray in the chamber above the water tank.



The double unit allows men to work on both sides of the hydro-foam dust collector. Its only moving part is a motor-driven fan.

Only the finest dust particles remain in the air currents passing up and through this spray bed, where they are wetter and retained in this third and final stage of dust removal. The exhaust fan and motor are mounted on the top of the unit and discharge directly into the room through a diffuser head, unless it is desired that this exhausted air be discharged outside the building.

If the exhausted air is discharged inside, there is no loss of heat in the building and the evaporation in the unit slightly raises the humidity of the room in which the unit is located.

These machines are made in single or double units. Operators may work on one side or both sides, depending on local requirements. The entire unit is portable and only requires electrical, water and drain connections.—The R. C. Mahon Co.

Protective Mask

Tested and approved by the U. S. Bureau of Mines, the new No. 602 Healthguard Abrasive Mask is said to be especially attractive to those industries in which harmful dusts of intense or lesser density are encountered during periods of extensive exposure, particularly in sandblasting operations. A special advantage is claimed in that low operating pressures of 2 to 9 lbs. per square inch result in full efficiency and low cost operation.

The mask consists of a soft moulded rubber facepiece with large replaceable laminated glass lenses, headharness and corrugated tube, filter unit with replaceable cartridge, air-regulating valve, pressure-relief valve, quick-acting detachable coupling and approved hose which connects it to the air supply. In use, the mask is completely covered by the new pure gum rubber Duratex hood for protection

of the head, neck and shoulders. The hood lens holder is fitted with an inner laminated glass window and an outer screen of coarse metal.

In operation, the air under regulated pressure passes through the filter cartridge where foreign particles and odors are removed. Control valve regulates the flow of clean air to the facepiece so that excessive pressure is said to be entirely eliminated by a fully automatic relief valve.—Chicago Eye Shield Co.

New Bracket Supports Mixer in Container

A new V-shaped bracket has been developed to support adjustable agitators in material containers. It spans and clamps over the open top of the

V-Bracket clamps across open end of drum.

container, as shown in the accompanying illustration. These brackets are made in two sizes to fit 30-gallon and 50-gallon drums. The bracket supports a direct-driven air-motored 2-propeller agitator.

A screw clamp at the pointed end of the V, allows for variations in the diameters of drums, and insures steadiness of the Pneumix agitator. The mixer can be adjusted to practically any angle desired.

The use of the Pneumix with its new holder does not in any way change the spark-free operation of the mixer, which retains all of its properties, such as variable speeds, light weight and quiet splash-free performance.—Eclipse Air Brush Co., Inc.

Portable Infra-Red Drying Units

This infra-red drying unit is adaptable to a wide variety of industrial applications such as laboratory tests, panel and cabinet repairs and automobile spot work. It furnishes an abundance of radiated heat. Temperatures range from 450°F. at 3-in. from the work to 250°F. at a distance of 18-in. in 16 to 24-gauge sheet steel.

The unit is 21-in. in diameter and is fully adjustable to all angles and from floor level to a height of 5-ft. Longer stems for operations above 5-ft. can be furnished. Bases are cast iron of ample size to prevent tip over and are equipped with ball-bearing casters. Standard equipment includes 15-ft. of super service cord and approved de-

Higher vertical rods are available for this portable adjustable 7-lamp drying unit.

tachable connectors. One model is equipped with a switch in rear of the housing. Another model has an automatic timer built into rear of lamp housing.—The Op-Al Electric & Mfg. Co.

Portable Sanding-Rubbing Machine

A pneumatic driven machine which the operator holds and moves with one hand, is useful for sanding, rubbing and polishing operations on practically all surfaces that are usually hand sanded, hand rubbed or hand polished. This machine has two working pads to which are attached abrasive paper for sanding, rubbing pads for rubbing and polishing pads for polishing.

The pads are given a rapid reciprocating motion in opposed directions; in other words, both pads move outside from the center at the same time and in toward the center at the same time.

The 2-pad air-driven machine in service.

The manufacturer has been designing and building mechanical sanding machines for replacement of hand-sanding since 1915. Models are available for dry sanding and wet sanding. The dry-sanding model weighs 8-lbs.; with wet-sanding attachment, 9-lbs. Length of pad stroke is 11/16-in.; speed, 3000 strokes per minute; air pressure required, 50 to 80-lbs.

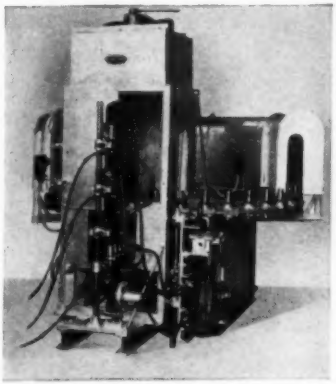
For sanding up close to beading or moldings, the machine can be equipped with rigid flat pads faced with hard white felt. These pads, side pointed for clearance, overhang the machine housing. Coupled with the large flat abrading area, it is easy for the operator to maintain level surfaces right up to the edges of trim and moldings.

For general purposes, a combination of oil-resistant mattress and air-type pad has been developed. This type of pad can be inflated to various degrees of hardness for a wide range of sanding operations. It is particularly effective on large flat surfaces—will follow the contour of the work, reaching shallow depressions. Each pad holds five to ten 3 2/3x9-in. sheets of abrasive paper. Pad size 1/3 of standard abrasive sheet—no waste or trimming necessary. Quick acting paper clips permit complete pad changes (2 pads) in less than one minute.

Flexible sandpaper pads have been developed which can be used with either model machine. These pads, made of spring steel, are faced with either soft or hard felt—can be used on either flat or concave surfaces. Pads of various radii can be furnished for corner sanding.—Sundstrand Machine Tool Co.

Electric-Eye Operated Shell Sprayer

This electric-eye controlled machine coats the inside and outside of projectiles in one operation. Shells are placed on the indexed turntable manually, carried around to a position in



Sprays both sides of shells automatically.

front of automatic spray guns that coat the outside while an extension nozzle on another gun comes up and sprays the inside. Action of the guns is controlled by a photoelectric cell so that there is no spray unless a shell is in the holder. After being sprayed, the shell enters a steam-jacketed oven built over the back of the turntable. As they emerge from the oven, the projectiles are removed by the operator.—Eclipse Air Brush Co., Inc.

Two-Cartridge Type Respirator

This new twin-cartridge type respirator is easy to put on and adjust. It is efficient and has remarkably easy breathing qualities. It fits the face with a perfect fume-tight seal; permits full vision and unhampered working freedom. The use of two filter cartridges reduces the breathing resistance to less than half of the single cartridge type.

Paint vapors and pigments are removed thoroughly and the life of each cartridge is increased. The respirator is easy to maintain and has all the features of comfort that appeal to workmen.—Binks Mfg. Co.

Prep-Wash for Cleaning Metal

Prep-Wash is designed for use in standard pressure-type alkali washing machines in which the liquid cleaner is sprayed or flowed onto the work to be treated through suitable nozzles at a pressure of 30 to 40-lbs. per square inch. The Prep-Wash material is used at temperatures of 180° to 200° F.

In the first stage of the washer, approximately ½ of 1% of Prep-Wash is used. In the second or final or rinse stage, approximately ¼ or 1% of Prep-Wash is used. In other words approximately ½ gallon of Prep-Wash to 100 gallons of water is required in the first stage and one quart to 100 gallons of water in the second stage.

The same amount of Prep-Wash is added to both stages of the washing machine every two, three or four hours according to the tonnage of metal that is cleaned, the amount of grease and oils or drawing compounds that are to be removed, or according to other factors controlling the amount of the Prep-Wash necessary to maintain the cleaning bath in a stabilized condition.

The cleaning material thoroughly removes oils and greases, as well as drawing compounds, from all metal surfaces. This product also has a neutralization effect on hand marks and other light rusting agents. At the same time Prep-Wash imparts a light phosphate rust-preventing film to the metal surfaces and slightly etches the metal surfaces thereby promoting better adhesion between the paint finishes and the metal.

Prep-Wash was primarily designed to provide an economical method of cleaning which would have many advantages over prevailing cleaning methods, in improving the adhesion of the paint finish and otherwise insuring a longer life to the paint finish by the elimination of all factors that

could possibly have an undesirable effect by causing paint failure due to improper cleaning or preparation of the metal before painting.

The Prep-Wash material and method of cleaning is less costly than some of the materials and methods now used. It is also effective from a paint standpoint. . . . It is safe and satisfactory, and does not deposit or leave behind on the metal surfaces any alkaline deposit which could afterwards cause paint failure.

Prep-Wash is neither an alkali nor an alkali cleaning system. . . . The Prep-Wash system is an entirely new departure from prevailing cleaners and cleaning methods and offers a mechanical method of cleaning which incorporates and improves the best points in alkali and solvent cleaning while at the same time eliminating the undesirable features of solvent or alkali cleaning.—Neilson Chemical Co.

Oil & Water Extractor

A new large-capacity oil & water extractor, known as E-75. This new extractor has a rated capacity of 75-c.f.m., at 60 to 70-lbs. pressure, and has two main-line air outlets, as well as two regulated air outlets.

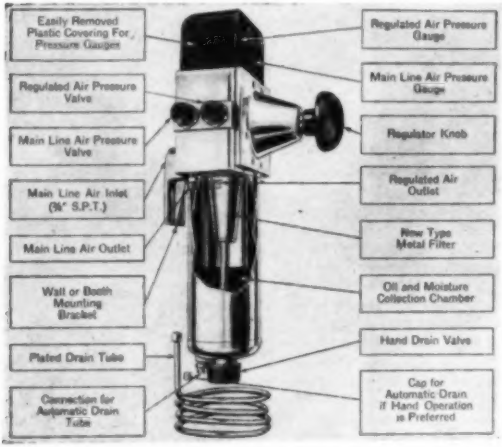
Designed to meet the needs of a larger capacity extractor, and ample to handle the air needs of several modern spray guns at low or high pressure, the new E-75 incorporates all the latest features of modern stream-lined designing. It includes a new air-cleaning principle with a highly efficient metal filter, which thoroughly cleans, but does not impair the free flow of air.

Another feature is the more uniform air pressure obtained, due to a new and improved large-capacity air regulator, which is part of this new unit. —Binks Mfg. Co.

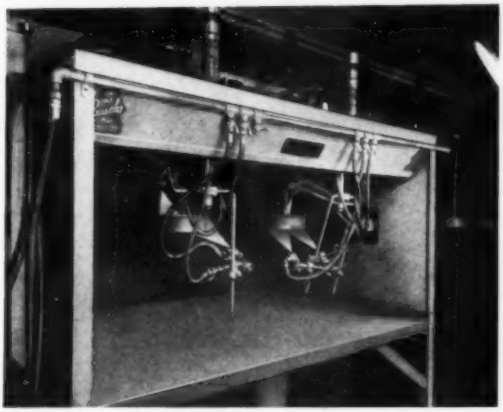
Unit for Coating Shells

Speeding the flow of ordnance to U. S. armed forces is a new type automatic unit for painting the exteriors of 20-mm. shells. Average production is 1800 pieces per hour—painted and dried. Larger units for greater production are also being manufactured and similar units are made for painting 37 and 40-mm. shells of various types.

In the operation of this machine, the 20-mm. shells are loaded manually and conveyed to the spraying sta-


Easily Removed Plastic Covering For Pressure Gauges
Regulated Air Pressure Valve
Main Line Air Pressure Valve
Main Line Air Inlet (¾" S.P.T.)
Main Line Air Outlet
Wall or Booth Mounting Bracket
Plated Drain Tube
Connection for Automatic Drain Tube
Regulated Air Pressure Gauge
Main Line Air Pressure Gauge
Regulator Knob
Regulated Air Outlet
New Type Metal Filter
Oil and Moisture Collection Chamber
Hand Drain Valve
Cap for Automatic Drain if Hand Operation is Preferred

This diagrammatic photograph shows several interesting details of the E-75 oil and water extractor for use in compressed air lines.



Automatic unit for airpainting anti-tank land mines. This special booth is 6-ft. wide, 4½-ft. deep and 6-ft. high, with shelf 3-ft. from floor, and is complete with removable air-distribution plates. Openings are provided at each side of booth for entrance and exit of work hanging from overhead monorail conveyor.

tion on removable holding and shielding fixtures. Special off-and-on control operates the automatic airbrushes as shells come in position. While being sprayed shells are revolved rapidly to insure perfect and complete coverage.

After shells receive the coat of lacquer they are conveyed through an electrically-heated thermostatically-controlled oven for a 3-minute drying period.

The unit includes a spray booth with exhaust, electrically-heated drying oven, "clamptight-cover" material pressure tank, water, oil and dirt separator to provide clean dry air, and automatic airbrushes with off-and-on control.—Paasche Airbrush Co.

Custom Designed Ovens

Industrial ovens, drying equipment and air heaters are included in the line of equipment featured by J. O. Ross Engineering Corp. Regarding the design of ovens, the company calls attention to the fact that this involves four major problems; namely, oven construction, method of heating, source of heating and material handling.

The four problems are interrelated, yet each has certain features which may be independently studied. Naturally, with four distinct problems, each having variables, the number of possible combinations is extremely large.

This company follows the policy of studying each oven problem individually, and recommending the particular combination of equipment which best fills the needs.

The predominating type of Ross oven construction is the insulated panel, made up with two metal sheets separated by an insulating material. Panel construction permits complete shop fabrication, rapid field assembly and ease of enlarging or relocating ovens. The requirements are:

1) Structural strength, to prevent bulging or bending and to support the oven top.

2) Adequate insulating value, which means a good insulating material and a minimum of through metal. The insulation must not compact during transit, erection or service.

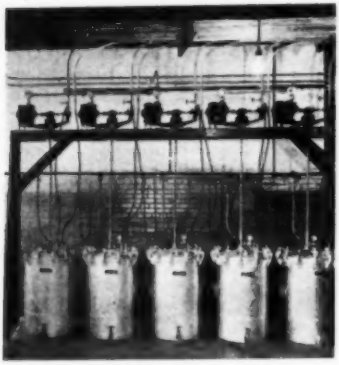
3) Tight joints; to eliminate leakage of hot air or fumes.

4) Provision for explosion relief, when solvents are used.

5) Access doors; for servicing and cleaning.

6) Resistance to possible corrosion.

Forced convection, which is the me-



Part of the paint supply room of a medium-sized paint-circulating system. The paint constantly circulates through the pipes which extend to and from spray stations. Photo, courtesy Binks Mfg. Co.

chanical circulation of heated air has the following merits for oven work:

1) Uniform oven temperature.
2) Uniformly processed material.
3) Shorter processing time.

To insure these advantages, a forced convection system must be correctly designed. Some of these design factors are:

a) Large volume of circulated air, which is a combination of primary and induced air.

b) Correct application, and direction of air; this depending on the physical characteristics of the material and the method of loading.

c) Control of temperature gradient; requiring in some cases, counterflow or zone temperature control for continuous ovens and time-temperature control in batch ovens.

d) Removal of vapors given off in processing; water vapor from some materials and explosive solvent vapors from others.

Additional information about large custom designed ovens to meet a variety of paint-drying problems, is presented in the company's 18-page bulletin, No. 130.—J. O. Ross Engineering Corp.

Pressure-Feed Cup Spray-Gun Assembly

The Crown Type RCA pressure-feed container assembly, one-quart capacity, is designed for use with Crown No. 20 and No. 22 spray guns. It is recommended for pressure-feed operations that require relatively small quantities of material, and for the application of materials of a consistency that cannot be sprayed successfully with a suction-feed container assembly.

This outfit is highly efficient for the application of airplane dope. It is a popular unit for duplicating large pressure paint container operations in testing laboratories. When used with the Crown No. 20 gun, with built-in main line air control, it provides a simple means of producing the modern stipple and spatter effects. Especially adaptable for the application of the new hammertone finishes.

The whole assembly is easily attached and detached. The steel container of one-quart capacity has a large opening (no inside threads) for easy cleaning.

An exclusive feature of this assembly is the ingenious dual-range air regulation from ½ to 30-lbs. pressure. It has positive low-pressure adjustment and fast adjustment on higher pressures. Another feature is a perfected positive-action check valve in the container cover, which prevents any backing up of material or clogging of regulator. The pressure regulator, gauge, etc., are conveniently grouped at the bottom of the handle, for proper balance and ease of handling.—Crown Spray Gun Mfg. Co.

Mixer-Agitator for Paints and Other Materials

"In our line of Pneumix air-motored agitators, we added a ring guard for use on 5-gallon cans of material. The ring protects the propeller from contact with the mixing vessel and also provides a convenient means of storage, as it eliminates the necessity for suspending the mixer when it is not in use. The four metal supports hold-

The guard ring also serves as a base when the mixer is removed from container and set to one side.

ing the ring in place protect the shaft and prevent its getting out of alignment. Two metal handles alongside the air motor, at the top of the frame, facilitate lifting the mixer from the container. The addition of the guard does not affect the operation of the agitator.—Eclipse Air Brush Co., Inc.

New Material for Degreasing

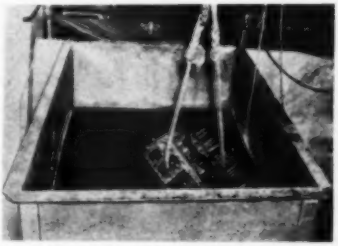
Announcement is made of a new mineral grease and dirt digestive solvent. According to A. F. Curran, research and development chemist, the new grease digestant is called Gunk X-11, and is available in the form of a concentrate, which may be diluted with a grease solvent before use, to charge large open cleaning tanks or vats.

It is stated that the newly developed digestive solvent tank is an excellent substitute for trichlorethylene vapor-phase metal-cleaning tanks, particularly in heavy duty automotive cleaning or similar applications where there is much insoluble dirt or smut to be removed.

The marketing of the product is announced at a time when there are far-reaching shortages of all chlorinated solvents.

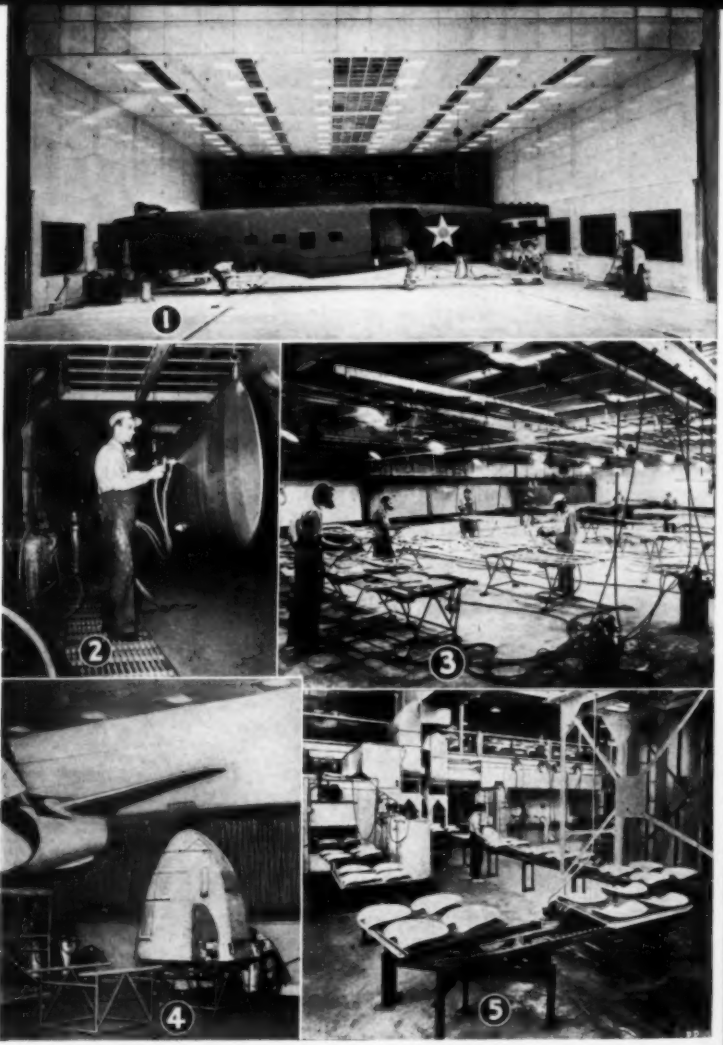
The new cleaning method is carried out by cold immersion of greasy or dirty parts. The new solvent, it is said, not only takes the cling out of hard mineral dirt and grease accretion, but emulsifies them as well, so that they may be instantly and completely rinsed away by sluicing with a water hose.

The removed oil and dirt disappear in the form of a milky oil-in-water emulsion which does not clog sewer drains, or present a fire hazard. The new process, it is stated, makes possible grease cleaning operations on a large scale with little investment in equipment, only simple rectangular tanks of suitable dimensions, and having an over-all capacity of at least 300 gallons, are necessary, and many reports have been received as a result of preliminary field tests that trichlorethylene vapor-degreasing tanks may be converted to the new solvent digestive and emulsifying method by regular available shop labor. Successful service tests intallation include airline shops, as well as U. S. Government overhaul and repair orders.



Parts are dipped in cold cleaning solution.

Engineering data sheets are available on request. Write Curran Corp., Malden, Mass.



1—This gigantic spray painting booth was designed and built to speed up the finishing of large airplane fuselages and to protect the health of workers.
2—Spray painting equipment used to finish airplane wings and other large parts in a tunnel spray booth with down draft, water-wash exhaust system.
3—Spray guns, tanks, regulators and hose serve America's gigantic airplane industry.
4—Dynaprecipitor water-wash spray booths, large and small, protect employe health by rapidly removing all paint fumes.
5—Finishing seats for airplanes with automatic spray painting equipment.
Photographs for the above illustrations supplied through courtesy of Binks Mfg. Co.

Spray Painting Equipment

PLAYS IMPORTANT ROLE IN WAR INDUSTRIES

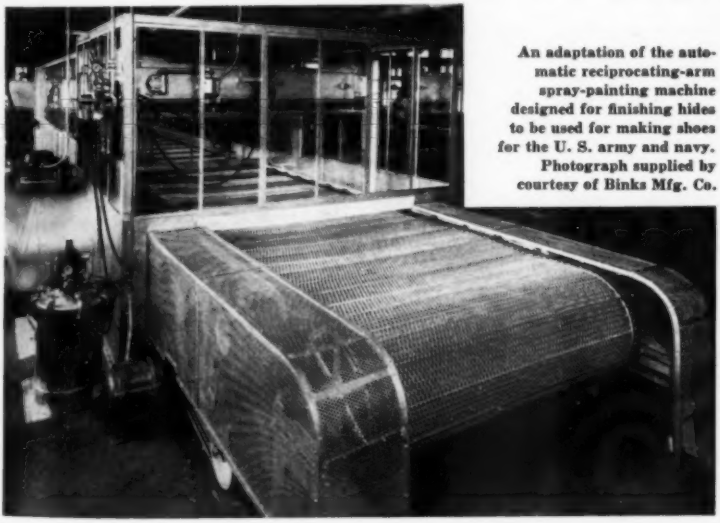
BY W. H. ROHR, Editor

WHEN Charles Steinmetz said: "Cooperation is not a sentiment—it is an economic necessity," he was thinking of peace time. Today, with both our Eastern and Western horizons darkened by the clouds of war, this quotation is almost an understatement.

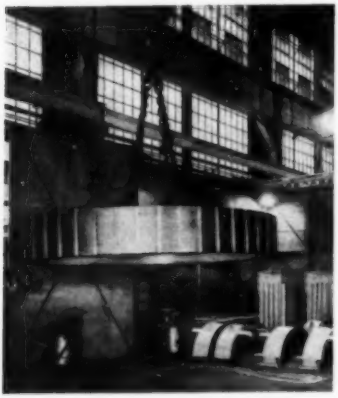
Never in the history of mankind has a country been called upon to accomplish what we in America have set for our 1942 goal. Never before has cooperation been so absolutely essential to the survival of a nation.

To turn $56,000,000,000 in cold cash into 60,000 airplanes, 45,000 tanks, 20,000 anti-aircraft guns, 8,000,000 tons of ships and the endless number of other essentials for war, asked for by our President for 1942, calls for a united effort which makes our past activities seem almost amateurish.

In this picture the manufacturer of spray-painting equipment has a real responsibility—that of keep-



An adaptation of the automatic reciprocating-arm spray-painting machine designed for finishing hides to be used for making shoes for the U. S. army and navy. Photograph supplied by courtesy of Binks Mfg. Co.



Large castings, and other heavy parts are quickly finished in this special dynaprecipitor water-wash spray booth with downdraft exhaust. Photo, Binks Mfg. Co.

ing quality finishing abreast of new accelerated production speeds.

This role is not as dramatic as some. We cannot trace actual victories to it but we know that without it fewer victories would be won.

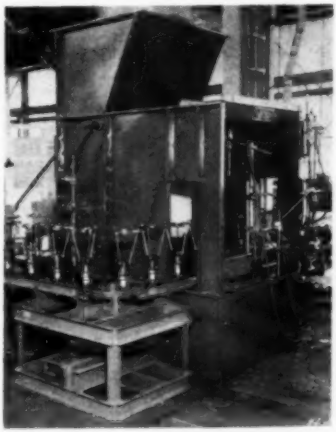
Fighter planes, bombers, tanks and mobile equipment of every type for America and her allies must operate under all weather conditions. It is essential that they be protected from the elements and wear by tough coats of finish to prevent rust, corrosion and rot.

Shells, bombs. hand grenades and other explosives must also be spray coated to protect them from moisture and handling if they are to perform their tasks with sureness. Leather for army and navy shoes and other equipment must be spray treated to give protection, long life and comfort. The machines used to make the tools of war and the machines which make these machines, must be painted not only for protection and long life but to increase the efficiency of the operators as well.

Aircraft, ships, buildings, large guns, airports and other equipment and structures, must be camouflaged. Windows must be opaqued for blackouts. Insignia must be painted on planes, tanks, ships and so forth. Shipping instructions and form numbers must be stenciled on packing cases and parts. Cans for foodstuffs must be coated for protection.

In addition to all of these and countless other purely wartime jobs, spray painting equipment must meet the demand for finishing essential civilian goods with minimum labor and materials.

In accepting this challenge, manufacturers of spray-painting equipment have designed automatic and manual devices that will not only keep pace with the whirlwind production speeds to be expected from war industries in



An automatic conveyorized spray-finishing machine now used for coating the 105-mm. shells. Photo, courtesy of Binks Mfg. Co.

Small spray-painting units of this type, singly and in multiple, are helping to speed up production in many war industries. Photo, courtesy of Binks Mfg. Co.

1942, but will go a long way toward conserving vital materials, man power and health.

Installations made in many of the country's largest airplane plants are perfect examples of American genius at its best. They speed up finishing, save materials, provide healthful working conditions and do all of this with little increase in labor.

Automatic spray painting equipment for use in finishing bombs, shells and all kinds of flat and irregular parts is superhuman. The spray guns turn on and off as the parts whirl past at speeds up to several thousand an hour, never tiring, 24 hours a day.

Large spray booths capable of holding complete bomber fuselages dwarf those used before. Paint-circulating systems are delivering the right colors at the right pressure to all spray guns in the finishing department, with resulting savings in floor space, lost time and materials.

Air supply and exhaust systems for finishing departments are eliminating dust, speeding up work and contributing to better finishes.

Yet these are but a few of the thousands of tasks performed by spray painting equipment for war and consumer industries. Even greater finishing problems lie ahead, but past performance of the spray painting industry gives us great confidence in its ability to cooperate with other industries and to lick any problems with which it is faced. Truly, we are working together to win the war.

Despatch Oven Co. Appoints Chicago Representative

The Despatch Oven Co. (Ovens, Dryers, Furnaces, Air Heaters) announces the recent appointment of Mr. Harold W. Munday, 332 S. Michigan Ave., Chicago, Ill., as the company's District Engineer in the Chicago territory on industrial ovens and air heaters for finishing baking, drying, coil and armature baking and similar processes involving equipment of this type.

Mr. Munday has had many years of experience in the industrial oven field and is in a position to be of real service to concerns that have or expect to need equipment of this kind.

Instruments You May Need

Plant operators in the process industries and also power plant engineers, as well as research men and manufacturers in general, will find much of interest in List CEC, issued by the Cambridge Instrument Co. It describes industrial models of analyzers, indicators and recorders that measure with laboratory accuracy. Recording gas analyzers, together with pH and other equipment for making precise measurements that effect savings of time, material and labor in production, are featured in this folder. It also invited inquiries on instrument problems. Send your request for a copy to the Cambridge Instrument Co., Inc., 3732 Grand Central Terminal, New York, N. Y.

Using Infra-Red Baking

MORE EFFECTIVELY AND MORE ECONOMICALLY

BY WILLIAM J. MISKELLA
Infra-Red of Cleveland

EXPERIENCE in 1941 has brought out many new and revolutionary developments in the application of infra-red heat in industry. At present, the major part of its service is in the paint-using industries. We all recognize the steps through which the use of electricity passed to gain a foothold in the home—in the operation of an electric range, for example. Always, there was some reluctance to use this seemingly expensive form of energy in place of gas, oil, coal, etc.

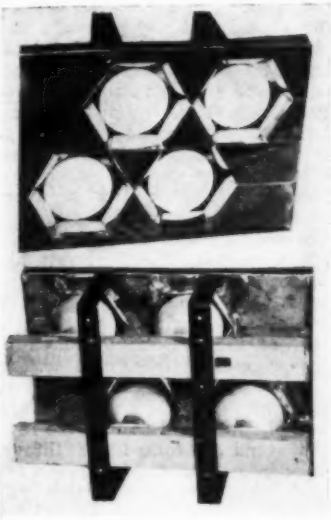
Enthusiasts for infra-red heating hailed it as a voice from heaven, due to its method of delivering heat rays to the work to be performed—simply shooting these billions of little heat "needles" at some object, and no one had to worry about radiation, insulation and so on. True, thousands of 250-watt infra-red heat lamps have been put to work in various types of production. Most of these have done well and have exceeded expectations, in comparison to some of the previous heating methods used.

Perhaps the most common form of infra-red set-up is the tunnel in which two vertical banks of lamps are arranged in checkerboard fashion, and set up to face each other, say 20-in. apart. The first lesson learned was that the structural work behind the reflectors became warm—and, of course, that didn't do anyone any good. Then, it was discovered that the heat rays were passing through the spaces between circular reflectors. In other words, the rays from one bank would cross over to the opposite side and pass through these little openings, and before long, the framework would be hot.

Hexagon Reflectors Present Solid Reflective Surface

The answer seemed obvious; why not plug these holes? That was easily accomplished by simply making each reflector face hexagon-shape instead of round. The hexagons can be arranged to fit together perfectly, forming a solid wall of reflector surface to turn back the rays toward the inside of the tunnel. This was an important development and it increased the efficiency of the infra-red tunnel considerably.

Much attention was given to sales arguments tending to belittle the convection type of oven and prove that insulation and close-in tunnels were not necessary. This



Front and rear views showing arrangement of hexagon-face reflectors in an insulated infra-red panel—or part of a panel. The rear view shows switch and brackets.

may have been due to the enthusiasm of the engineers who were thinking in terms of the physical laws of lighting. All of this sounded fine. In reality, we were reflecting heat in lieu of light—which is true. However, it is one thing to reflect "harmless" light rays and waste them to your heart's content, for nothing serious happens. On the other hand, it is wasteful to throw out heat rays promiscuously, because they cost money.

More Powerful Lamps

Again, lighting engineers were thinking in terms of the limitations of incandescent lamps. These lamps are no stronger than the cement used for holding the little brass screw bases to the glass globe which, in turn, contains the heat filament. As a matter of fact, much work was done on high wattage lamps—up to 1000 watts—in order to make them bigger and to keep the lamp base so far away that it would not give way when higher temperatures were needed.

It so happens that the critical temperatures between these two processes were above and below the curing requirements of many synthetic enamels and wrinkle finishes. In other words, a positive cure could be assured with 1000-watt lamps, while a doubtful result was obtained with the 250-watt lamps. Therefore, paint companies were kept exceedingly busy in formulating materials that would cure or bake effectively with the lower wattage lamps, since thousands of these were in use as compared with hundreds of the 1000-watt type.

Insulation Not Required? It Does Have Possibilities

Thus it will be seen that hundreds of infra-red installations have been put in plants throughout the nation, based upon the theory that radiant energy did not require any insulation. Results were obtained, production was increased, handling was simplified and all that, but the cost of operation remained high. Indeed, many planned installations were not installed because of the cost factor.

It is perfectly natural, where new developments are made available and where satisfactory results are obtained, to rush in and adopt them without mature consideration, particularly when the cost is within reason. This speaks very highly for the infra-red process. Gratifying results were obtained with "naked" equipment and with lamps operating in the open. However, in an infra-red installation, wher-

ever you can see "light," it is certain that there is an energy loss which may possibly be saved.

Borrowing an Idea From Convection-Type Ovens

We can overlook somewhat higher costs of operation and even considerably higher cost of equipment by doing without enclosures and insulation — but if these latter bring us that very important advantage of "getting over the hill," in reference to the critical temperature, with 250-watt lamps and without having to suffer lamp breakage and short lives for the lamps, then we have accomplished something. Perhaps, I could describe this accomplishment as a cross between the old convection type of oven and the modern infra-red radiant-energy type of set-up.

Anyway, the most revolutionary development in 1941 was just that —the introduction and use of equipment that would protect the lamp bases and improve the cost of operation by producing more efficient reflection and by the use of that medium which years of experience in convection-type baking ovens has proved to be the proper procedure.

In the evolution of the convection-type oven, wall thickness was gradually increased from 1-in. to 4-in. in order to capture and use every bit of energy possible. Thousands of extra dollars spent for thicker and better insulated oven walls were found later to be investments wisely made.

Blank Reflector Sections; Where and How to Use Them

In 1941 two great factors entered the infra-red picture—more effective reflectivity and insulation. The reflectivity factor does not stop with the polished portions of the reflector or its edges. It goes far beyond that and puts into use blank reflector sections, placed on an angle at the top and at the bottom of the infra-red oven installation. Also, the end sections are exceedingly important. Here it is advantageous to have sets of blank reflector sections both at the entrance and exit ends of the oven through which a conveyor passes. Obviously, reflector blank panels are a very good investment because they trap and put to use rays which otherwise might get away—and the fine thing about it is that the cost of operation is zero.

However, it is not alone sufficient to furnish reflector sections. They must be arranged so that the rays that tend to escape are thrown back into the oven. This calls for a delicate arrangement that will make all panels in an insulated infra-red oven installation individually adjustable, as well as having every one of them insulated whether it is lamped or blank.

With the insulated panels "out in front" and containing glass insulation to the extent of 1½-in. in thickness, coupled with reflector panel faces capable of "billiarding in" any escaping heat rays, there is no possible chance for a "heat attack" on the poor little weak lamp bases. Therefore, higher ambient or surrounding temperatures in the oven are possible.

What does this mean to the finishing industry? Simply that formulation of materials will be simplified. In fact, it will now be possible to bake effectively such old line materials as black japan, a material that has been more or less scorned by all manufacturers of infra-red equipment in the past. How fortunate this development happens to be at this timely mo-

ment, when defense procedure is sure to force us back to use old-time finishing materials. Of course, their outstanding qualities will not compete with synthetics, as we have known them, but they will serve for the duration.

Conveyors Help Speed Operations

THE accompanying illustration shows a view in a plant doing defense work, where the roller conveyor at floor level is used effectively to eliminate the handling of loaded steel drums at two important stations on the way to or from the railroad car.

In the foreground the man is spraying a drum — why or with what we do not know. A guess is that he may be blacking-out previous markings or labels or touching up places where old paint has worn from the used drums. It is evidently a regular procedure since a spray booth and turntable are permanently located at this point in the conveyor line. The roller conveyor turntable, which is part of the conveyor line, makes it easy for the spray operator to spin the drum around for inspection and spraying.

A safety rule stenciled on the booth states that, "a respirator positively must be used when operating spray booth", so the workman is probably spraying a quick-drying lacquer.

Beyond the spray station is the platform weighing scales on which there is also a section of the roller conveyor. Similar adaptions of roller conveyors could be used in many establishments.

Conveyors of different types are being used extensively to speed up various production and transfer operations in all kinds of industries.

This picture of the Logan conveyor supplied through courtesy of the Logan Co., Inc.

How We Doubled Our

WITHOUT INCREASING OUR FLOOR SPACE

BY A. W. JOHNSON

Partner in Industrial Finishing Co.*
Job-Shop Finishing, Chicago, Ill.

OUR business is the application of various spray finishes and dipped finishes to metal and plastic surfaces. Because of defense orders, we were faced with the problem of doubling our capacity, with no additional floor space available.

We have been in the job-shop finishing business for a number of years and have constantly studied the various short cuts applicable to our business. This was fortunate for us as we were prepared when our customers began sending us thousands of pieces they had fabricated for defense jobs.

All of our work is small. Normally it had been manually sprayed in individual booths on wire trays, with from one to 40 pieces on a tray. We spray very few large pieces.

We own a batch conveyor-type oven large enough to take the full capacity of four spray booths, as well as a battery of batch type ovens which we are supplying from another group of spray booths.

Considerable time, money and effort have been invested in the improvement of our ovens. This included the installation of accurate temperature controls, blowers, and ducts to give proper circulation and distribution of air, resulting in uniform baking.

Time Studies Revealed Great Loss in Efficiency

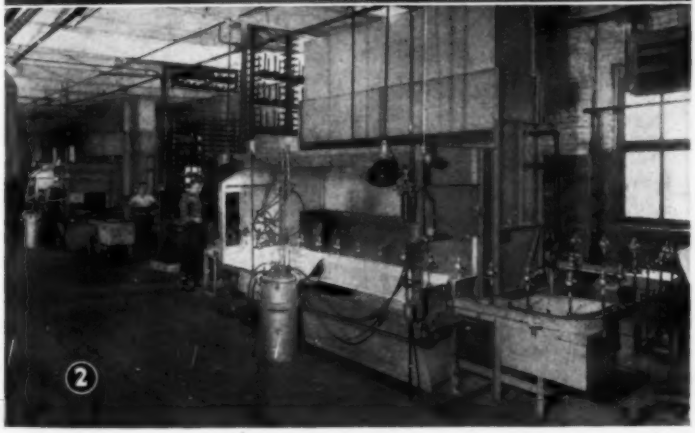
A few years ago, after conducting a number of time studies, we found that on an average an operator's spray gun was open 58% of the time and the balance was consumed in placing the trays in and out of the booth, picking up and laying down the spray gun, plus loss of time when unfinished trays were not available.

Our objective in arranging for a better spray-machine installation was to eliminate the 42% nonproductive spray time. This was done by a machine the shape of a race track with crossarm workholders approximately 36-in. from the floor for holding the wire trays. These trays were loaded on the conveyor, which took them through one 4-ft. dry booth. Here the parts were sprayed on one side. They then pass through the 4-ft. space between booths. In this space, where necessary, the parts were turned over. In the second booth the spraying was completed.

The conveyor returned behind the booths, where the trays were removed and placed on racks of

*Has no connection with INDUSTRIAL FINISHING Magazine, published by Practical Publications, Inc., Indianapolis, Ind.

Finishing Capacity....



New water-wash spray booths at left and right of elevator conveyor, which appears in the lower picture (2). In the top picture (1) the spray equipment is set up for manual spraying but trays of small parts to be spray-coated are moved to, past and from the spray operators by a conveyor which makes a loop around the spray booth.

In the lower picture (2) the spray booth just described shows in the background. Another new water-wash spray booth—the one appearing in the foreground—is also conveyorized, but it is set up for complete automatic spraying.

the batch conveyor ready for baking. Much to our satisfaction, the results were greater than we anticipated. The two sprayers now turned out more work than was formerly done by four, and there was a saving in handling trays as now all of them were brought to one place. From this central point they could be loaded and unloaded by one man, where two were previously required.

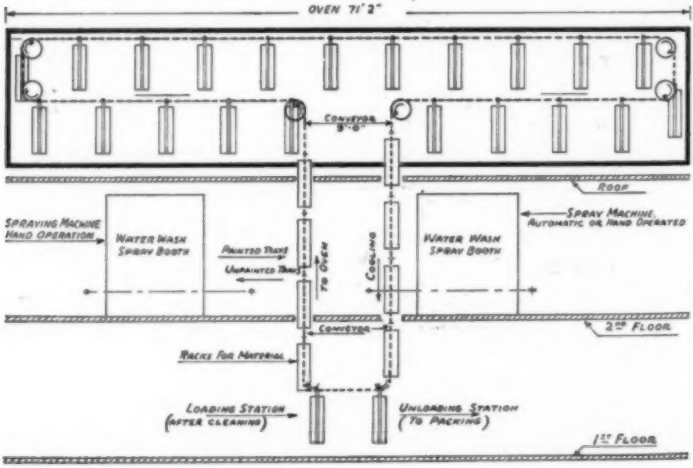
We Gained Considerably By Conveyorized Spraying

We also found that certain easily sprayed parts were coated in less than one quarter of the former time. Hard-to-spray parts showed a lesser saving. But, some of these hard-to-spray parts could have been handled on an automatic spray machine. That gave us something to think about for the future.

Our plant was laid out so that the receiving, cleaning, wiping and some of the traying were done on the first floor, with the balance of the traying, painting, baking and shipping being done on the second floor—and that necessitated a lot of handling with the large volume of work we do.

One of the major improvements we made was the installation of an automatic degreaser. We were among the first in the Chicago district to install a hand degreaser. A period of years has proved its effectiveness. We didn't hesitate to install the automatic unit, even though it had greater capacity than the balance of the shop. This was fortunate, because this unit is sufficiently large to handle our potential volume.

In spite of all the improvements we had made to handle the normal growth of our business, we found



Elevation view of elevator conveyor which ascends from the first floor loading station, passes through the second floor (where trays of unfinished parts are removed, sprayed and replaced) enters and travels the full length of the oven on the roof, then descends through the second floor and passes the unloading station on the first floor.

Don't risk FIRE!

USE SAF-TE NON-BURNING REMOVER

Here's a new remover which you can use anywhere and on any surface with absolute safety. Though ***non-burning***, SAF—TE is more powerful than former inflammable removers.

Acts equally well on paint, varnish, lacquer and synthetic finishes. Penetrates many coats, quickly turning a tough finish to a soft sludge that comes off clean. Leaves no waxy residue —no difficult wash-up job. Harmless to wood, metal or any surface.

We are makers of the largest selling removers in America. Our wide experience will save you money. Consult us on your removing problems.

We have a remover for every purpose

In addition to SAF-TE, we make the well-known

LINGERWETT

—largest selling general remover in the U. S. A. Fast, economical.

WONDER-PASTE

A semi-paste remover, ideal for upright surfaces.

NO-WASH

A new remover that requires no wash-up, saving 30% of time in removing.

WILSON-IMPERIAL CO., 115 Chestnut St., Newark, N. J.

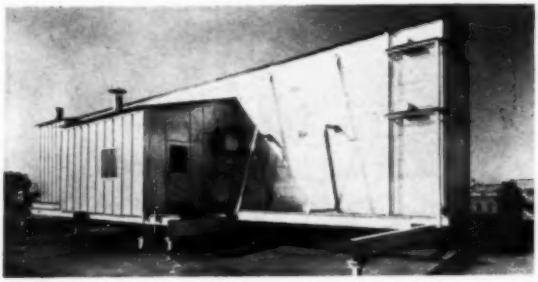
MAIL COUPON

for complete information on SAF-TE and other removers, also assistance on your removing problems.

Wilson-Imperial Co., 115 Chestnut St., Newark, N. J.
Kindly send me information on SAF-TE and other removers. I am particularly interested in a remover to be used on:

.....

Name.....
Street.....
City.....State..... E-22



Our conveyor oven—well insulated and weatherproofed—is located on the roof. Its heating unit is in the "lean-to" that extends out from the middle of the oven structure.

our shop wholly inadequate to take care of the increased business resulting from the armament program. We made a survey and study of numerous automatic and conveyorized spraying and baking installations and, with the aid of our past experience, this is how we quickly doubled the capacity of our plant without increasing its size:

Our analysis indicated that this increased production could be handled by two additional machines—one for manual spray operation, the other automatic.

New Water-Wash, Conveyorized Spray Booths Installed

From the experience gained through the use of our first spray machine we knew the basic ideas were sound, but certain improvements had to be made in the new equipment. Substantially, all machines are the shape of a race track, approximately 18-ft. long by 8-ft. wide, with workholders 3-ft. from the floor for our trays spaced on 36-in. centers. As the parts on the trays move through the booths they can be manually revolved and the spray work is split up between the two operators. Usually the first one does the one side, flops the tray, and the second operator does the other side.

The new machines have been improved to provide better protection of the chain through the booth by using a double sheet-metal guard with the front guard higher than the rear. With the operator's guns open 90% of the time, it did not take long for the old dry booths, fans and stacks to become so coated that these booths had to be cleaned every night. Now, having highly efficient, recirculated water-wash booths with water under the work, by means of tank extensions (except one station) as well as a back wash, washer, and by careful adherence to compounding instructions, we have reduced our clean-up to routine skimming of the tanks, and complete clean-up is a matter of months apart.

As a matter of protection to the operators, and to keep work free from over spray dust, an exhaust air velocity of over 150 lineal feet is provided. In fact, the doors on the ends of the booths are adjustable up and down to keep the face velocity as high as possible.

Because pieces to be sprayed vary to such a large degree in ease or difficulty of spraying, it was found that numerous simple pieces could be coated faster than was possible on the old unit, so that the new speeds permit as many

METAL PRODUCTS LAST LONGER
with Polymerin Finish

With shortages here, products today must *last longer.* Consumers must get more service out of the appliances they buy; replacements will be difficult to obtain.

An essential factor in the life of any metal product is the finish which protects its surface. "Save the surface and you save all" is an old slogan, but still a true one.

Extra-tough Polymerin* industrial finish is helping to lengthen the service life of thousands of floor lamps, fluorescent fixtures, washing machines, refrigerators, Venetian blinds, stoves, heaters, roasters, fans, kitchen cabinets, and many other types of appliances. Amazingly resistant to chipping, marring, and deteriorating agents, Polymerin keeps products looking attractive—makes them *last longer.*

POLYMERIN SPEEDS DEFENSE!

Manufacturers with defense contracts are using Polymerin-type finishes because of their speed-baking characteristics. Polymerin is particularly well suited for use with the new fast-bake infra-red lamp set-ups. Ault & Wiborg Corporation, 75 Varick Street, N.Y.C.

*Reg. U. S. Pat. Off.

Polymerin

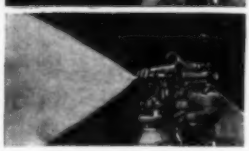
MAKES METAL PRODUCTS LAST LONGER

1. WATCH THE TEMPERATURE OF PAINT TO SAVE MATERIALS

▶ The wrong temperature for finishing materials often causes a decided *increase* in cost of materials per unit finished. This kind of waste is doubly costly when the watchword of industry is *conservation.*

TOO COLD...causes higher viscosity, which necessitates higher air pressures. This results in waste of materials.

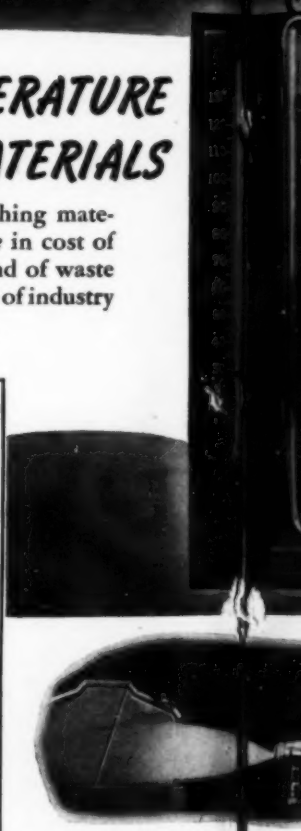
NORMAL...provides spraying materials that can be applied swiftly and economically.



TOO HOT . . . makes the paint too thin, resulting in thin films and many rejects because of sagging.

2. TEMPERATURE OF PAINT SHOULD BE CLOSE TO 78° F.

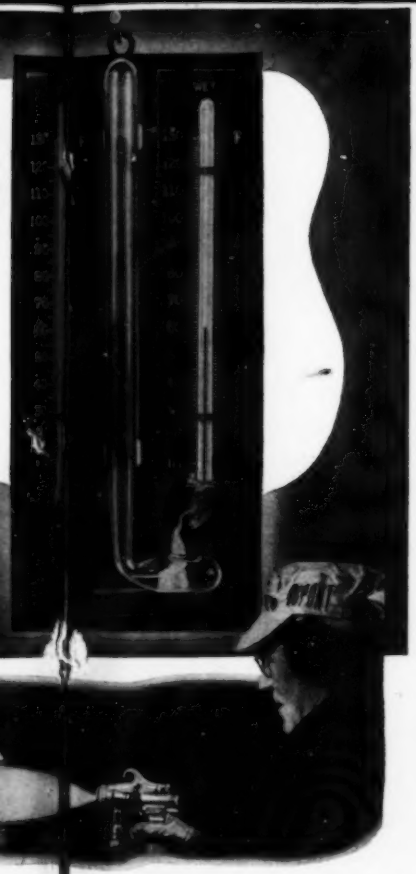
▶ These photographs were all taken with the spray gun operating under the same air pressures and with the same nozzle adjustment. The variations in fan width and behavior of the finish are due solely to the different temperatures of the finishing materials being applied.



3. SOMETIMES PAINT NEE

▶ Finishing materia[l] and red[uce] a room with control[led] tempe[rature] 85° F.). Someone sh[ould] be di[rected] taining this control of tempera[ture] the temperature of the spray r[eg]ulated within the same limits for all f[inishes]

ONOMIES . . . *from the Du Pont man*



CHECK THESE 11 POINTS TO SAVE MATERIALS

NEXT MONTH READ ABOUT

1. Temperature of paint
2. Viscosity of paint
3. Air and fluid pressures
4. Adjustment of spray gun
5. Handling of spray gun
6. Triggering of the gun
7. System in the strokes
8. Uniformity of coating
9. Thickness of film
10. Causes of rejects
11. Touch-up procedure

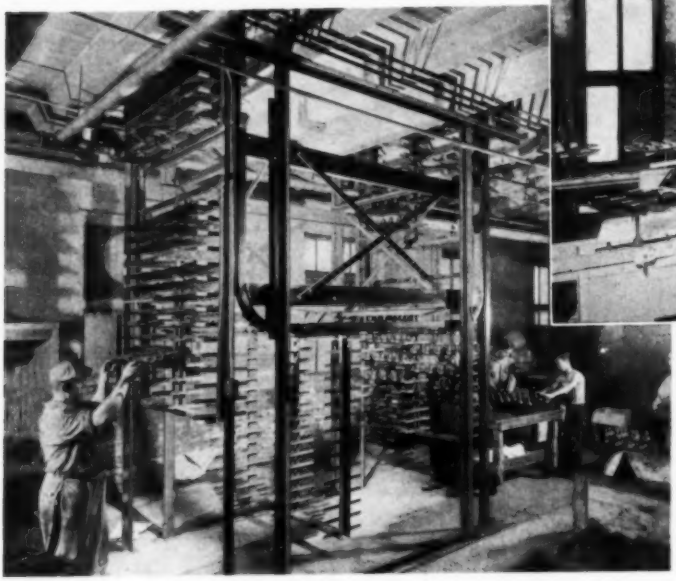
● The Du Pont man can show you how to control these factors . . . can aid you in conserving finishing materials and lowering painting costs. And remember—he's backed by a vast chemical organization with the finest of facilities for developing, making and applying better industrial finishes. When the Du Pont Man calls on you—call on him for help. E. I. du Pont de Nemours & Co. (Inc.), Finishes Division, Wilmington, Del.

Look for a detailed discussion of each point in this monthly series.

ES PAINT NEEDS WARMING UP, TOO

materials and reducers should be stored in controlled temperatures (kept within 70°— one should be directly charged with maintrol temperature. Also, for best results, ure of the spray room should be controlled me limits for all finishing operations.

Below, left: Loading the elevator conveyor on the first floor —in other words, placing loaded trays of small products or parts in a conveyor carriage. At the lower right, same view, the descending conveyor, loaded with bake-finished parts, is being unloaded; that is, the trays of finished parts are being removed from the loaded conveyor carriages.

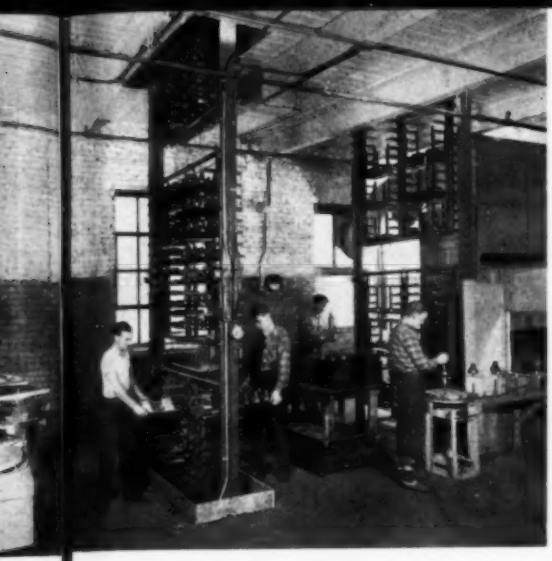


as nine trays a minute to be sprayed on each machine. Of course, the speed is variable and can be run as low as three trays a minute for difficult pieces. Our superintendent has been particularly adept at judging the proper speeds to operate the machines for the large variety of work we do.

Automatic Spraying is Possible When Desired

Our pride and joy is the automatic spray feature that we had incorporated on one machine. This permits us to spray as high as 54 pieces per minute, inside and out, and we have found a lot of parts that can be economically finished this way. In fact, on several easy pieces we are using less than half as much paint as by hand spray.

Under this new method the parts are brought to the machine in large boxes. The loading operator places one part on each spindle. As the parts pass the automatic spray guns they are revolved and sprayed only long enough to be completely covered. The length of time the guns are open is controlled by mechanical cams and the



Second floor station of the elevator conveyor —ascending at left and descending at right. This station is located between the conveyorized water-wash spray booths shown in views 1 and 2.

speed of rotating the parts is controlled by a variable-speed drive. They are then unloaded and placed on trays which, in turn are placed on the moving oven conveyor.

We worked out an adjustable workholder that handles the majority of our work. This consists of three ⅛-in. square bars radiating from and at right angles to the hub. On each of these bars is a prong that can be slid in or out on the bar and fastened by means of a set screw. This workholder is effective when we are spraying the inside of the parts as well as outside. To permit easy cleaning we coat them with spray shield.

When no parts are available for automatic spraying the spinning device is cranked out of the way, surplus spindles are removed and crossarm workholders on 36-in. centers are again placed on the machine to permit hand spraying.

Incidentally, we protect the crossarm tray workholders by means of metal shields which are taken off and put in our strip tank for cleaning at regular intervals.

Oven Conveyor Also Serves as Elevator

Our oven conveyor is an elevator from the first floor through the second into and through the oven on the roof, and return. It has eliminated a lot of handling. Instead of trucking loads of unfinished trayed parts up the freight elevator to the various spray booths, and the finished parts back down again, everything is handled from the first floor.

The trayed parts are placed on the moving carriage which has a top capacity of 30 trays on 4-in. centers. It will handle any combination of trayed parts with a possible piece size of 5-ft. high by 24-in. wide by 16-in. deep on each side of the carriage. This gives us all the flexibility we desire.

As this carriage is being loaded it is also moving upward. For a one hour bake it takes three min-

utes for each carriage to pass a given point or two minutes for a 40-minute bake.

Handling of Trays is Greatly Simplified

At the second floor the trays are removed from the carriage, loaded on to the spray machines and as the parts are finished the trays with the finished parts are put back in the carriage as it moves upward toward the oven.

When the one spray machine is hooked up for automatic spraying, the only difference is that large boxes of unfinished parts are placed at the spray machine and trayed after they are sprayed. This means that only half the carriage has to be filled on the first floor for the other spray machine so that sometimes we use the second half just to get parts to the second floor that are to be sprayed in the hand booths. But you will notice, from the pictures, that we are particular to keep the carriages full which go through the baking oven.

Close-up of pulleys and belt which can be set up to spin the spindles that rotate the parts as they pass stationary spray guns. The device is adjustable.

The carriages enter the bottom of the oven, make a left turn, travel along the lower half of the oven, at the end they rise about 6-ft., travel along the top of the oven, drop to the lower half, then move along this section until they drop through the openings in the second floor and first floor.

Here they are unloaded, inspected, wrapped, counted, and packed in shipping boxes ready to return to our customers.

Baking Oven and Heating Unit Placed on Roof

The final design and location of our oven solved our space problem. We placed it on the roof. The oven is supported on large beams extending from the ends of the building columns to the side walls, and not on the roof proper.

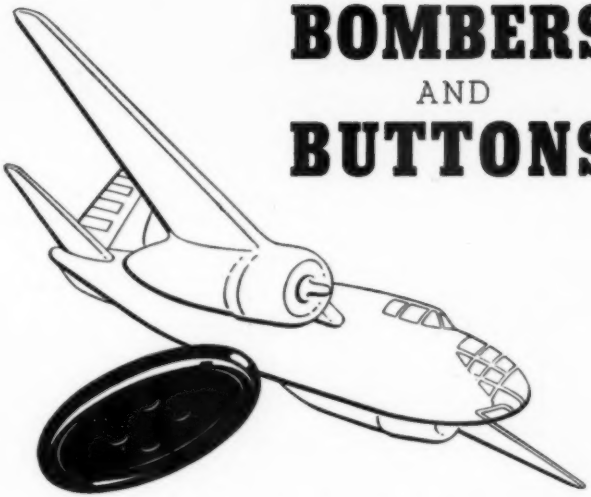
In size the actual oven space is 72-ft. long by 14-ft. high by 7-ft. wide, with 4-in. rock wool insulation all properly weather-proofed. This provides a total travel of 150-ft. for each of the carriages which are on 6½-ft. centers and travel at one time or another parallel to the bottom, ends and top of the oven.

Flexibility in Baking Schedule is Possible

Such a travel arrangement has an additional advantage in that any given piece is baked at various elevations in the oven, thus breaking down any possible temperature variation. However, all tests made indicate a temperature variation of only 2° F. plus or minus, at 275° F. The principal reason for this small variation is the method of heat distribution and the direct-fired gas heater, recirculating type.

This unit recirculates the hot air throughout the entire oven by

BOMBERS AND BUTTONS



Whether it is an important part of a bomber or an ordinary clothing button there is a Nason Finish to improve it.

We are ready to meet this National Emergency with fifty years of finishing experience. Every day our staff of skilled laboratory technicians is solving problems for the hundreds of new Defense Manufacturers, as well as for our old-established customers in every kind of industry.

Wherever economy of time and material is important there is a Nason Finish that has been tried and tested.

We offer these years of experience and variety of fine finishes to solve your particular finishing problems.

R. N. NASON & CO.
manufacturers
PAINTS · VARNISHES · LACQUERS

NASON *fine finishes*

51 POTRERO AVENUE, SAN FRANCISCO • 2201 BARRANCA STREET, LOS ANGELES

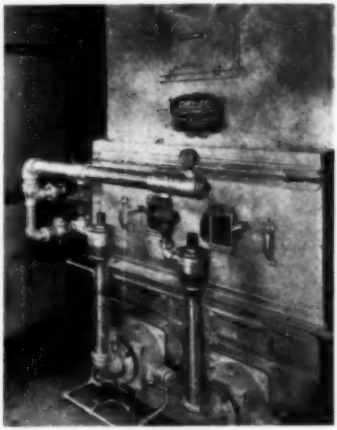
means of numerous outlets and recirculating ducts. It has a range of 150° to 400° F., and is combined with a conveyor travel through the oven of 25 minutes minimum to 75 minutes maximum. This covers all of our baking requirements. Along with the control equipment, the heating unit is located in a separate house that is attached to the oven.

Oven control and safety equipment have certainly improved since we entered the finishing business. From past experience, we did not hesitate to buy the best. The actual oven temperature indicator and variable control is mounted on the wall on the second floor. Near the heater is the safety control cabinet which is entirely automatic, except for starting, and is approved by Factory Mutuals.

Pressing the first button starts the oven fans, which remove all foul gas. It is six minutes before the time-delay relay permits the pilot to operate; then the heaters can be turned on. In addition there is an automatic ignition, flow switches on fans, pressure switch on gas, heater delivery control, etc., as well as the automatic oven temperature control. In fact, if anything unsafe happens the gas automatically goes off and can't be turned on until this condition corrects itself or is corrected.

Since all our parts are not baked at the same temperature, the ability to make temperature changes in a reasonable length of time has been of extreme benefit to us.

In addition to the many advantages of any modern equipment, such as better cleaning, baking, uniform finish, etc., *our principal advantages are the speed of getting work out of our shop and the reduction of direct labor.* It is difficult to give exact figures, but on an average we are now able, with this new equipment, to degrease, inspect, tray, load, paint, bake, unload, inspect and pack approximately 30,000 to 130,000 pieces in eight hours, with 12 to 20 men.



Close-up of front of oven heating unit.

Photographs for cuts used in this article, supplied by The De-Vilbiss Co.

Oakite Expands Service Facilities

To better meet the rapidly increased needs for its services and products by metal working plants located in New England and the Southwest, Oakite Products, Inc., 22 Thames St., New York, N. Y., announces the addition of two newly created divisions to its nation-wide field service staff.

The New England Division, with headquarters in Hartford, Conn., at 410 Asylum St., Room 320, Capitol Bldg., is headed by Mr. T. R. Smith, newly appointed Division Manager, who will supervise the activities of the 11 men comprising this division.

The second new Oakite Division is the St. Louis and Southwestern Division, which will make its headquarters in St. Louis. Mr. S. C. Shank, the Oakite Service Representative in the Toledo, Ohio territory since 1930, has been selected to fill the post of Division Manager.

"SURFACENE"

5-Hour Combination Stain and Filler!

• Are you facing a slow-down in furniture finishing because of an enforced change from lacquers to slower-drying varnishes?

Then get acquainted with "Surfacene"—Glidden's brand new 5-hour combination stain and filler! It will save enough time on your under-coating operations to enable you to equal or even beat your best former overall finishing records.

Compare these schedules for yourself—old methods took two days for staining and filling, with overnight drying on each, ready for sealer and lacquer on the third day. With "Surfacene" you stain and fill in one operation. It dries in five hours, ready for sealing the same day—varnish the next morning!

You make substantial savings, too, by cutting handling and application expense in half. And "Surfacene" is available in all shades for mahoganies, walnuts, oaks, to meet your individual preferences.

Send sample panels of both your present colors and unfinished woods to Glidden for a conclusive demonstration that will show you how "Surfacene" can turn a *slow-down* to a *speed-up* on your finishing line.

THE GLIDDEN COMPANY • National Headquarters, Cleveland, Ohio
Factories or Branches in Principal Cities

Blackout With Paint

BUT SELECT IT AND USE IT INTELLIGENTLY

BY H. H. MENEFEE

TODAY, for the first time in the history of this wide-awake industrially-minded country of ours, it has become necessary for many of our cities and villages to completely blackout the lights of their homes and industries. Such a job reaches gigantic proportions when it is considered that this country, during the past several years, has been production conscious. It became practically necessary for all factories and industrial establishments to be so constructed as to afford a maximum amount of the proper kind of light to produce the best possible results. The trend has been to furnish sunlight or daylight in the proper proportions—and to do this it became customary to install large numbers of skylights in the industrial plants throughout the country.

Such a large number of skylights in various industrial plants presents a most important as well as a most difficult approach to the proper execution of blackout operations. To properly cope with this vitally essential task now at hand, we must call upon the utmost ingenuity in working out a feasible and effective solution.

Three Types of Openings to Blackout

Basically there are only three types of openings that lend themselves to the blackout treatment, as will be set forth in this article. They are: 1) skylights, by far the most important; 2) slanting one-piece windows, and 3) vertical windows and doors.

Street lights and neon electric signs are not considered. The only effective method of dealing with such sources of light is to completely extinguish them during the blackout period.

To properly deal with the subject, let us discuss the applications and methods of blackout for each of the three types of openings. But first let us consider just what is to be expected of any particular blackout medium. This is, in itself, quite a subject. Immediately it comes to one's mind that, under different conditions, different results would be expected and would be rendered by the installers. However, we like to know just what we should do ourselves to help attain this desired effect, or to be able to tell, with a reasonable degree of accuracy, just how effective the blackout precautions are that are

Remember Pearl Essence for Substitute Metallic Finishes

MEARLMAID

PEARL ESSENCE

Joins Up for Defense

- A non-conductor — Has high reflective value — Picks up minute light rays — Ideal for Instrument Panel Boards — Dials — Control Handles and all defense products requiring identity in dim light.
- Can be applied to all kinds of materials — Supplied in full range of colors and shades.
- Can be used wherever lacquer is suitable.

Complete information, data and finished samples sent on request.

THE MEARL CORPORATION

153 WAVERLY PLACE NEW YORK, N. Y.

Factories

ROSELLE, N. J.

EASTPORT, ME.

MEARLMAID PEARL ESSENCE

Priority Rating Is Not Required

Available in Unlimited Quantities

"WORLD'S LARGEST PRODUCER OF PEARL ESSENCE"

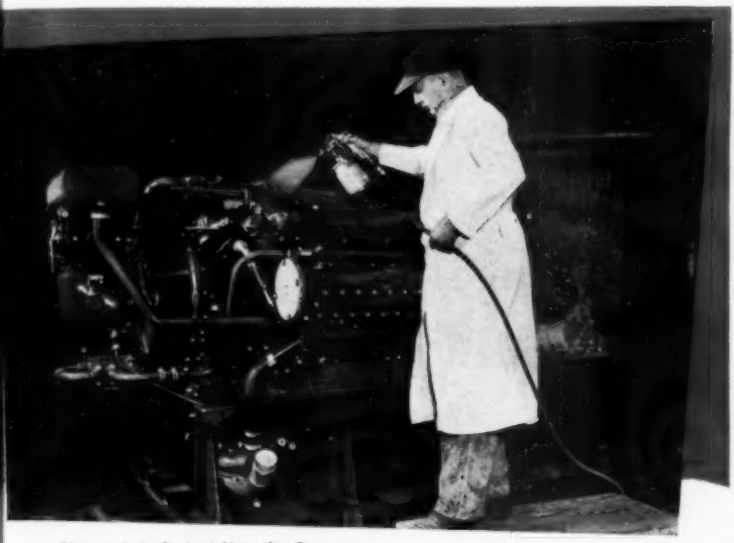
MOSQUITOES

with a 4050 H.P. Sting

● Too small to hit—too tough to sink—too fast to stop—they're the sensational new PT Boats, the "Mosquito Fleet." They'll hurtle 70 miles an hour over any sea to sink a sub with depth-bombs, torpedo a raider, or blast a bomber from the sky. And they're going into active service in the Navies of the United States, Great Britain and Canada as fast as they can be built.

The power behind their deadly sting is Packard Motor Car Company's great 1350 horsepower marine motor, developed from aircraft engine experience of World War days! Each PT has *three* of these huge engines—4050 h.p.—to hurl it on at more than a mile a minute.

In two years Packard has built over $17,000,000 worth of these motors. A new order for $19,000,000 is under way. Daily output has been multiplied many times.



Photographs by Packard Motor Car Company

Packard uses DeVilbiss Spray Equipment exclusively to paint these motors, as well as the thousands of Rolls Royce engines it is building for American and British warplanes —just as it has used DeVilbiss Spray Systems for many years to paint Packard cars.

Other factories and arsenals all over this broad land are relying today on DeVilbiss Spray Systems to paint and coat many types of armament and munitions. If you have a defense contract *and a finishing problem,* here's the way to speed that last vital step between the assembly line and the line of duty.

THE DEVILBISS COMPANY, TOLEDO, OHIO

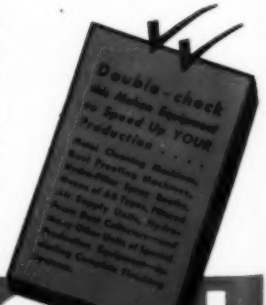
Canadian Plant: WINDSOR, ONTARIO

3-stage, Conveyor Type Washing Machine, specially designed, built and installed by Mahon engineers for cleaning airplane crankcases, cylinder blocks and pistons.

Designed and Engineered . . . .

TO PUT YOUR METAL CLEANING ON A WAR PRODUCTION BASIS

How to speed up the cleaning of metal parts—do a thorough cleaning job—and at the same time cut down man-hour costs—is a problem faced today by many manufacturers, who must keep war production rolling through. The built-to-the-job metal cleaning equipment, illustrated above, solved just such a problem for a large automobile manufacturer engaged in the production of airplane engine parts. If you have a similar problem, the extensive experience of Mahon engineers can be applied to advantage in bringing about a quick and economical solution in your metal cleaning operations. Put this specialized knowledge to work for you without further delay. There is no cost for consultation.



THE R. C. MAHON COMPANY
DETROIT • • CHICAGO

MAHON

installed in our own localities, not to mention our own offices, plants and homes.

What the Blackout Must Accomplish

A blackout is supposed to be a means of blocking out the light rays that are emitted from a source that is in or near an objective of the enemy. According to reports reaching us recently, our enemies consider everything an objective in their heinous warfare methods; therefore to be on the safe side it is advisable, in the danger zones and surrounding territory, to completely blackout all sources of light.

One method is to completely board up all windows, doors and skylights, but this is usually out of the question for a home that is to be lived in or a factory that is in production. During the daylight hours most of the blackout precautions are of no avail, for to properly camouflage against daylight bombing requires an entirely different technique. In homes, where there are few if any skylights, it is probable that these windows in the roof could be boarded up on the inside to prevent light from showing through. Of course, with a skylight, it is not only the light that passes through that is important; you also have to consider the mirror-like surface that the smooth glass makes on the outside. This mirror-like surface makes an ideal target, as the moonlight is reflected from it at night and gives the bombardier a real target at which to aim. Here again, the home owner can effectively remedy the condition by merely placing a blanket or sack over the involved skylight. However a large plant that has literally acres of skylights offers a much different problem—and here,

How to treat skylights, windows and door openings to prevent any light from within shining through; and how to kill reflective surfaces.

for the first time in this discussion, we meet with the most effective blackout medium, *paint.*

Where Paint Enters The Picture

We must not rush into such a problem once we decide that paint is the proper medium to use. Even then there are several things that must be considered, such as the proper kind of paint to use, the method of application, the color of paint that should be used, and just where the paint should be applied. The kind of paint to be used is largely determined by the place in which or on which it is to be used, and how long the paint is expected to remain on the surface upon which it is applied.

Let's take, as an example, the skylight in the composing room of a large daily newspaper plant in one of the larger cities—always a target for invaders. By the nature of the work that has to be done in this room, it is necessary that the lights remain burning practically all night long in order that the latest news of the day may be delivered to the public the following morning. The work being of a rather tedious nature, good light is necessary. It is advisable to use all of the daylight that comes through, so we do not want to blackout the skylight during daytime. We do want to completely blackout the lights at night and at the same time kill the mirror-like surface on the top of

the skylight, which is so much in evidence on moonlight nights.

Recommended Treatment for Blacking Out a Skylight

To do this most effectively, as set forth in the above circumstances, I would recommend the installation of a blackout shade that could be drawn across the skylight during the blackout period. To further the cause and to take care of the top of the skylight, I suggest a coat of varnish to which has been added some olive drab paint (one pint to the gallon of varnish). Apply this coating to the top and, while the varnish is still tacky, sprinkle over it a medium heavy coat of sand or sawdust of about the same color as the gravel or the special roof coating that happens to be on that particular roof.

This sand and sawdust coating gives the skylight the necessary rough finish that does not reflect light. At the same time it produces a surface that blends in satisfactorily with the surrounding surfaces. This treatment does not completely block out the sunlight which is so desirable in the kind of work that is carried on in the room under the skylight. I believe that this is one of the best treatments that can be given to such an opening under the circumstances.

One can readily see that the treatment just outlined would be out of the question in a large iron foundry—an establishment of such importance that it probably will be operating 24 hours a day. This immediately presents that all-important problem as to the proper means of blacking out the skylights of these large plants. To do this I recommend a coat of blackout paint on the inside of all of the skylights, in addition to the same treatment to the outside of the skylights, as set forth for the problem previously discussed.

The introduction of this interior blackout paint presents the question as to just what kind of paint would be best suited for such a job. The question that first has to be considered is just how long the paint is expected to remain on the skylights. If it is to do service for a year or so, the application of a water-base protein-binder paint should be satisfactory. This type of paint is economical to use and, when it becomes advisable, it can be removed by merely hosing it off with water.

For a more permanent paint, a casein-bound paint could be used and it would be more durable, but when it becomes necessary to remove the paint it will require a bit of work in the form of hosing it with water and then scrubbing it off with a brush. It is also acceptable to treat the outside of the skylight with a single coat of paint instead of the varnish-sand treatment. In this case we have to use a different kind of paint because the paint film must be able to withstand the elements and, for a paint film to do this, it must be impervious to water and sun.

I recommend using a casein-bound paint or, better still, a resin-bound paint. By this term I mean a paint that is bound or held to the surface by a resin that is impervious to water, yet it is emulsified by water and is evenly distributed throughout the paint mixture to act as a binder after it is applied to a surface.

So far in this discussion of the uses and application of paint, color has not been mentioned. To clarify the reasons for any recommendation of olive-drab green paint as

TOUGHNESS

A Recognized Quality

IN

RELIANCE

FINISHES

TUF-TEX RUBBING VARNISH SPEDE-VAR
DURATONE STAINS SYNTHENOID ENAMELS
LO-VIS-LAC LACQUERS
VENEER-ITE AND BONNIE WOOD

RELIANCE VARNISH COMPANY

INCORPORATED

LOUISVILLE KENTUCKY U.S.A.

the best color, as compared to black which probably is what everyone would consider to be the logical selection, we have to take into consideration that black absorbs heat and would necessarily raise the temperature of the interior of the buildings. Also, it is the absorption of this heat that causes the glass to crack and finally break.

The only way to overcome such a situation is to leave a 1-in. border around each panel of glass to absorb the expansion and contraction of the glass, which is affected by the absorbed heat. Of course, the 1-in. borders around each pane of glass would offer a definite pattern from the sky and the effect of the blackout would be lost.

The method of application of paints for blackout purposes is the same as for any ordinary paint job. The paints can be either sprayed or brushed. On either type of application the problem of pinholes will have to be dealt with. Of course, a few very small pinholes will not make any difference, for they are only minute openings that could not possibly transmit light rays of sufficient magnitude to carry far enough for visual observation from an airplane. However, we must not overlook the possibility of small pinholes becoming larger.

How to Treat Sloping and Large-Light Windows

The second type of opening is the slanting or extremely large single-piece vertical windows. These should be given very much the same treatment as skylights. This treatment is especially important if there is a chance for light reflection from extraneous sources. Many such windows can be sufficiently dealt with by installing the recommended type of dark blackout curtain on the inside to keep the direct rays of the incandescent lamps from shining upon outside surfaces that are visible to overhead observation.

At this time it might be interesting to note that lights of different colors are different in the ease with which they can be seen at a distance. Red can be seen the farthest and with the least effort. Blue is the most difficult of all the colors to be seen, especially at a distance, therefore, it is wise to install blue light globes in the floor lamps and in all those lights that are not to be used for reading or for high illumination.

Another precaution that is often overlooked is the color of the sidewalks or the portion of the lawn adjacent to the house. This may seem a bit far fetched, but it is these surfaces that reflect any light that might escape from the windows of a home or office building. If they are white or highly reflective, this light will become visible to aerial observation. It is advisable to cover any sidewalks or extremely white surfaces with some freshly dug earth or a coat of olive drab paint.

In reference to perpendicular windows and doors, about the only logical treatment is to use blackout drapes, and keep them shut if it is possible. Where this is not possible, paint the floor in front of them with a dull olive drab paint and use a blue or green light in the vestibule or near the door, so that if any light rays strike the painted surface they will not be reflected for aerial observation.

It is the ingenuity and foresight of our military leaders that will win battles for us on the battle field, so it will be left up to the ingenuity and cleverness of civilians

It takes more than smart lines!

Your product may have lines as smart and graceful as Miss America's . . . but what about *finish?*

When designers create modern lines for a product, important as that is, the problem of eye-appeal is only partially solved. Finish, too, must do its part.

Don't let your product be handicapped in competition because of an inappropriate or unattractive finish.

All you have to do is to write us and give the facts. Our creative studio will analyze your problem and develop a protective and attractive finish that will give your product originality and distinctiveness. There is no charge to reputable firms for this service.

ROCKFORD VARNISH COMPANY

Manufacturers of Finishing Materials

ROCKFORD • ILLINOIS

NO TAMPERING WITH QUALITY

to win their home battles of defense against air attack by an ever alertness and willingness to cooperate with the authorities. We must work out our own means of blackout and camouflage against the enemy air force that bombs whatever it sees, without regard to any sense of fairplay or decency, so let's do what we can to prevent enemy bombers from seeing anything worth bombing.

Oven Heat Cleans Steel Surfaces

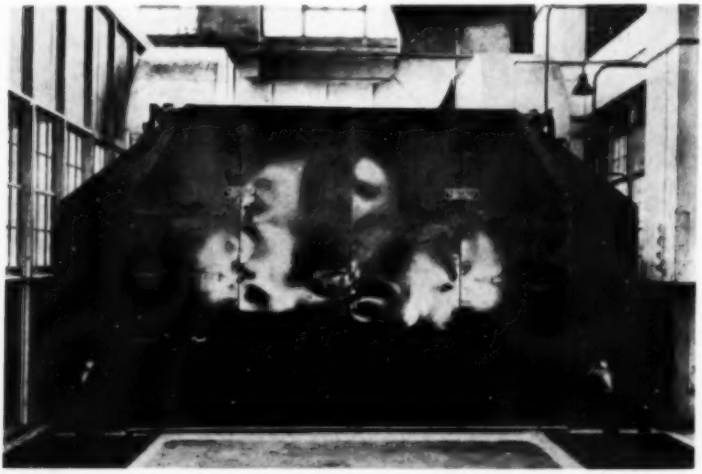
SMALL metal parts, with oil or grease on their surfaces, are often difficult to clean, preparatory to painting. Naturally, if small metal parts are not completely free of oil—completely clean—the enamel is likely to chip off.

In our factory we had trouble for years with extremely small parts—label holders—which need to be punched for an eyelet, and eyeleted, after they are finished. In service they rub against each other and chip off the enamel.

A few months ago we began to use dry heat for cleaning these small metal parts, and our troubles have vanished.

These small parts, as they are formed, are strung on racks, each rack holding 30 to 60 parts. Three of these racks are hung on a rod, and about 100 rods are hung into a truck which goes into the oven for baking the synthetic enamel coating.

A small oven was built, merely of sheet steel, with electric heaters in the bottom. A false bottom was placed above the heaters to distribute the heat. These rods are



Another view of a large water-wash spray booth of the down-draft type, used to finish tanks and heavy equipment in a U. S. Arsenal. Photograph, courtesy Binks Mfg. Co.

Protective Coatings for

DEFENSE

You are among the many no doubt who have adapted their Plant to fill Defense Needs. You may need Information on Protective Coatings to meet specific Government Specifications.

We are prepared to help you.

Day after day Hilo Defense Coatings to meet some Government Specifications are going forward to manufacturers for their specific needs.

ASK US FOR WHAT YOU NEED

P. S. For Non-Defense work Hilo Black Japans and Enamels are probably your best bet for CONTINUAL AVAILABILITY, in these days when critical raw materials are being held for Defense Work only. The Hilo Blacks are described in Bulletin No. 1.

HILO VARNISH CORPORATION

BROOKLYN, N. Y.

CHICAGO, ILL. **BOSTON, MASS.**

hung in this oven and the temperature is allowed to go up to 350° F. for about half an hour. Then the rods are removed and hung on the regular rack and sent to the spray department, without any washing of any kind. The dry heat completely vaporizes the oil and makes these small parts perfectly clean, insofar as oil is concerned.

As the racks of parts are sprayed they are hung back on the truck and when the truck is full of sprayed parts it is run into the oven where the enamel is baked in the regular way at about 250° F.

These small parts, with only the high-temperature dry cleaning, hold the enamel better than by any other method of cleaning we have ever used.

Other difficult parts that have been going through our finishing department for years are the slats for flexible-roll curtains. Because these slats are rolled, oil on the inside cannot be removed by washing, and this oil works out and causes trouble.

Lately these slats also have been run into the oven and allowed to "bake" at a high temperature before they go to the spray room. When they come out of the burn-off oven they do not even require wiping, except when they have been allowed to oxidize, before going to the finishing operation.

We are experimenting now with this same idea on several other small parts. While we are not yet in position to say that this method of cleaning metal can be applied on anything, it has worked on about everything we have tried it on, where the only cleaning required is to remove oil.—C. C. CASEY, General Manager, Work-Organizer Specialties Co.

Fast-Drying Varnishes

SINCE lacquers and lacquer solvents are hard to obtain for anything but defense work there is now a great demand for a fast-drying varnish to take the place of lacquer in the general furniture and piano manufacturing trade.

I have tested some of these synthetic-type varnishes, both in laboratory tests and production work, and have found them to be almost as fast as a lacquer schedule. In other words, it is possible to put on two coats of this varnish in the same day; or about six hours apart under ordinary finishing room temperature (about 75° to 80°F.).

This schedule could be shortened if a varnish drykiln could be used with a temperature of about 110° to 120°F., and a relative humidity of about 40%. These varnishes can be water rubbed the next day, but they will require a little more drying time if they are to be rubbed with oil, especially if the rubbing oil is reduced with naphtha.—FERD ROSEN.

Shell Painting Bulletin

A new bulletin of 12 illustrated pages 8½x11-in. contains information about automatic units and special equipment for coating shells, bombs, land mines, fuse parts and miscellaneous items. Copies are obtainable by writing Paasche Airbrush Co., 1909 Diversey Parkway, Chicago, Ill.

Despatch Appoints Representative in Missouri

The Despatch Oven Co., Minneapolis, Minn., announces the recent appointment of Shea-Brownell Co., 3908 Olive St., St. Louis, Mo., as exclusive representative in the Missouri territory. Mr. Brownell's contract covers all types of Despatch industrial ovens, dryers, furnaces, air heaters, and other special equipment of Despatch manufacture. Mr. B. M. Brownell has had many years of practical experience in the oven and furnace field.

R
F P
A New, Better, Air-Dry
Crystal Lacquer
NECESSITY has again proved the mother of invention. When wartime priorities reduced the supply of certain raw materials long considered essential to the manufacture of air-dry crystal lacquer, Randolph chemists really rolled up their sleeves.
In record time, they have developed from substitute materials, a NEW, AIR-DRY CRYSTAL LACQUER that every exacting test has shown to be *better* than the formula used for years.
Write, wire or telephone for a sample. Test it thoroughly and you'll agree.
Dopes — Thinners
Lacquers — Synthetics
RANDOLPH
FINISHING PRODUCTS CO.
Carlstadt New Jersey

Recover Used Solvents

AND RELIEVE ANOTHER BOTTLENECK IN INDUSTRY

BY RAYMOND S. ANDERSON
Solvents Recovery Service, Inc.

WHETHER a plant is 100% engaged in defense work and has a low priority rating, or is producing nothing but non-defense materials, the purchasing agent for that plant is generally experiencing considerable difficulty in obtaining solvents.

The solvents such as acetone, toluol, ethyl acetate, alcohol, trichlorethylene, carbon tetrachloride, etc.—mostly used in finishing operations including cleaning, stripping, and degreasing—are the ones for which there is the largest unsatisfied demand.

In some cases where the regular dealers cannot furnish the solvents, the situation is so bad that manufacturers are paying as high as three and four times the market value in order to obtain the material from any available source. Even though a purchasing agent can place the order at a reasonable price, he still may be unable to obtain delivery, and material on order is not of much use to a plant that needs the solvent at once.

Save Dirty Sludge That Contains Solvents

To a very large extent this particular bottleneck is unnecessary. Hundreds of thousands of gallons of the solvents (such as those referred to above) are being wasted daily. Any manufacturer who uses thinners and solvents for washing, stripping and degreasing operations, and who does not save the dirty sludge resulting from such operation and have the solvents recovered from that sludge is, to some extent, responsible for this shortage.

In these days a manufacturer who permits such a waste not only is neglecting a very definite chance to cut costs, but he is contributing to the difficulties of other manufacturers. Many small manufacturers and some large ones engaged in non-defense work are finding the lack of thinners and solvents so serious that they will have to close their plants.

The failure on the part of many concerns to relieve this situation by having their wash solvents recovered is mainly due to the fact that this matter has not been called to their attention.

For years the lacquer concerns and some of the larger manufacturers using wash thinners and solvents have taken advantage of the very large savings made possible by having the solvents recovered from their sludge. But it is only for a comparatively short time that the smaller uses of wash thinners

It's accuracy
that counts

There is no guess-work in the formulation of Walker Protective Coatings. Accuracy is the keynote of our endeavors. Expert knowledge of fundamentals and careful attention to details insure finishes that meet the most exacting specifications. Give Walker Service a trial.

Walker provides a dependable source of supply for all types of industrial finishes; coatings for defense purposes, for guns, ships, planes, shells and hundreds of other items. To speed up your defense production finishing investigate . . .

PRIMERS SURFACERS LACQUERS

SYNTHETICS WRINKLES

"Call on Walker"

H. V. WALKER CO.

Elizabeth, New Jersey

MODERN PRODUCTION FINISHES

and solvents have realized that this saving was also possible for them through utilizing the services of concerns whose entire business consists in the recovery of solvents.

Save What's Cleaned From Degreasing Machines, Too

An outstanding example of a saving which, to a large extent, has been neglected is that obtained by recovering the trichlorethylene and carbon tetrachloride from the sludge removed periodically when cleaning out degreasing machines. Most users consider that sludge is entirely useless and send it to the dumps, but I have seen as high as 50% of the solvent recovered. The average recovery is much less than that percentage, but I have never encountered any that did not produce at least 15% of solvent.

The percentage of solvents recovered from wash thinners is, of course, very much higher, running in some cases to as much as 90% and even 93%.

Recovered Solvents Are Clean, Effective and Economical

The recovered solvents are, in general, water white, neutral, dry, and for many purposes comparable with the original thinner. The cost is only a fraction of that of new thinner, and most important of all is the fact that the recovered solvents can be returned to the manufacturer within about ten days of receipt of the dirty sludge at the plant where the recovery operations are performed.

At the present time thousands of gallons are being recovered every day, but this quantity can be increased many many times if all manufacturers using solvents for washing, cleaning, stripping and degreasing would take advantage of the savings involved in having the solvents recovered from their dirty sludge. By so doing they would definitely help in opening up the bottleneck that now exists in the solvents market. Furthermore, the opening up of the bottleneck in solvents would be a definite contribution to national defense and the keeping of many small non-defense industries in business.

This is certainly one instance whereby we in industry can not only help others, but at the same time help ourselves and make a still further contribution to our country's war-defense efforts.

Infra-Red Baking at Westinghouse

A BATTERY of 1,368 infra-red lamps is helping speed the production of electric transformers needed for defense by doing an hour's job in eight minutes.

The electric drying lamps dry transformer tanks from six to eight times as fast as the former method, according to H. V. Putman, manager of the Westinghouse transformer division, Sharon, Pa. The lamps have stepped up tremendously the production of distribution transformer tanks at a time when speed is of utmost importance.

Westinghouse has increased its production of distribution transformers 65% in the last year, and at present nearly 50% of the output is being supplied to the Army and Navy and to industrial plants engaged in national defense production. These small transformers are an important link in the production of light and power for air fields, munitions plants, naval bases shipyards, fortifications, cantonments, and the Panama Canal.

In the painting process, the

Industrial Finishes

that make the most of available raw materials to give you greatest durability, together with attractive appearance and economy.

• FOR APPLICATION BY ALL METHODS

JAMES B. DAY & CO., CHICAGO

The overhead chain conveyor, traveling at the rate of 4-ft. a minute, carries painted transformer tanks between banks of infra-red drying lamps (4-ft. high, 32-ft. long) to bake the coat of paint in eight minutes.

transformer tanks are hung by hooks from an endless conveyor chain. Traveling the rate of 4-ft. a minute, the tanks first pass a workman who paints them inside and out in a few seconds with a spray gun. Then the tanks take their 8-minute ride between the two banks of drying lamps where infra-red radiation dries the paint by raising its temperature quickly to about 300° F. Each bank of lamps is about 4-ft. high and 32-ft. long. They consume a total of 342-kw., which is enough to supply the normal lighting requirements of more than 500 average homes.

The present installation dries only the base coat of paint. But more lamps and special machinery are being istalled to make it possible to spray and dry both base and finish coats in one continuous, 25-minute operation. To make this possible, a cooling chamber is being installed to bring the temperature of the tanks down to about 150° F. after they emerge from the first drying. Such cooling will prevent "blistering" of the finish coat when it is sprayed on.

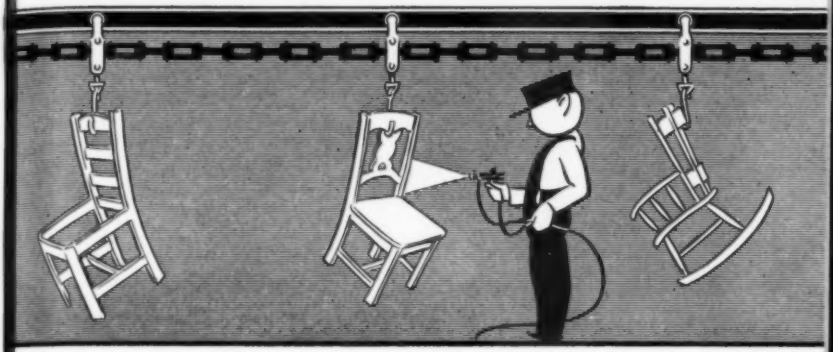
The infra-red lamps are 250-watt units combining both lamp and reflector in a single hermetically-sealed bulb. They produce a narrow, concentrated beam of radiant heat energy, with less than 5% of .their total energy omitted as visible light.

Infra-red radiation is a form of heat that travels In a straight line through air or space. Therefore, most of the heat from the lamps goes directly into the paint, causing it to dry very rapidly.

The principle on which these lamps do their heating and drying job is as old as the sun itself. The sun emits invisible infra-red heat rays that travel more than 90 million miles through sub-zero space, yet they produce warmth on the earth to make it habitable. Approximately 50% of the sun's energy is comprised of such rays by the time it reaches the earth. — WESTINGHOUSE.

New York Woodfinishers' Supply Co. Appoints Southern Man

Mr. Ralph Engel, President of the New York Woodfinishers' Supply Co., Inc., announces the appointment of Mr. A. G. Spencer as the company's Southern representative. Mr. Spencer, who is well known to the furniture trade in the south, will continue to represent the Rudd Lacquer Corp. and will maintain his headquarters at Lenoir, N. C.



● **TO FURNITURE MANUFACTURERS . . . . yes, and to all other manufacturers who would like to install PALMER-BEE conveyor equipment for finishing operations, *we apologize.***

Our plant is now operating practically 100% on defense work, which means a deference in conveyorizing of finishing operations in non-defense plants until after the emergency.

To those maufacturers now operating conveyorized finishing systems the services of our engineers and service men are still available. If your present conveyor system needs repairs or changes to meet the difficulties of changes in finishing materials, we will do our best to help you.

PALMER-BEE CO., DETROIT, MICH.

Specialists in conveyorising of all production operations

Rust Prevention

A new principle of rust prevention is announced by the Milburn Co., 905 Henry St., Detroit, Mich., in the form of a cream known as Ply-Rustex, which is applied to the hands of the worker before contact with highly polished metal surfaces. This new step eliminates perspiration corrosion and other forms of rusting caused by the handling of metals during machining and processing operations.

With Ply-Rustex, the worker applies the cream to his hands before touching any part of the article. This new technique enables free handling of the metal throughout the machining operations without gloves. That is because Ply-Rustex forms an invisible film on the skin, a protective coating that is inert with respect to chemicals, oils, cutting compounds and other materials that may be a part of the particular industrial process.

This preparation is non-toxic and positively harmless to the skin. It is easy to apply, like a vanishing cream, and it is removed with equal facility. Moreover, since it forms an impervious protective coating, it prevents irritations that may result in many forms of industrial skin disorders.

Camouflage Paints

Camouflage paints for concealing strategic military and civilian objectives by making them blend in with the colors of the surrounding earth and foliage to prevent spotting by aerial cameras and bombers, are announced by the Sherwin-Williams Co., Cleveland, Ohio. They are made in such colors as field drab, earth brown and dark green, according to color standards established after years of testing by army experts and are said to meet with the requirements of the Office of Civilian Defense.

The new paints are designed for spreading over roofs, buildings, streets and other structures that might disclose the presence of a bombing objective, or which might serve as landmarks from the air. They dry without gloss or reflections and permit existing streets to be "painted out," or non-existent streets to be "painted in." They make conspicuous objects merge into the natural background. They adhere to practically any type of surface, from glass to asphalt roofing, and may be spread over blacked-out windows, roads, sidewalks, tanks, smokestacks, railway ties, etc. One of their most immediate uses, the Sherwin-Williams color experts believe, will be in the repainting of gasoline and oil storage tanks and tank farms to confuse enemy bombers.

British camouflage experts have done an effective job in remaking the British landscape by the use of camouflage paints and similar devices. In many cases industrial building groups have been made to look like a row of cottages by clever painting. Strategic roads have been rendered inconspicuous, while faked roads were introduced, running across fields, factories, houses and whatever happens to be in the way. The company executives point out, however, that no camouflage painting should be undertaken until authorized by the local director of camouflage.

Fluorescent Lights Improved

Fluorescent lighting is following the same evolution as incandescent lighting, except at a greatly accelerated rate. First came the bare lamp; then it was used with a crude reflector be-

New . . .

MATERIALS SUPPLIES EQUIPMENT

FIRST AID TO SUB-CONTRACTORS OF AIRPLANE PARTS

Because of our large volume of "government-specification" finishes for both army and navy equipment, Berry Brothers can supply any finishing material which you may need.

We can also help you improve your finishing room methods — speed up production — eliminate needless handling — meet scheduled deliveries!

Our technical men know *application systems as well as materials,* and have the practical knowledge needed for working out an efficient finishing room program.

We are doing everything possible to help our country's war effort and will gladly assist you in any sub-contract work you may be doing — *or contemplating.*

Quality Finishes Since 1858

BERRY BROTHERS

Industrial Varnishes • Enamels • Lacquers

DETROIT, MICHIGAN • WALKERVILLE, ONTARIO

JERSEY CITY • BOSTON • CINCINNATI • CHICAGO • ST. LOUIS

hind it; finally came a wide variety of specialized fixtures for best utilization of the light for specific jobs. Nearly two decades were required for filament lamps to reach this highly developed third stage. Fluorescent lighting, now only in its fourth year, has already reached the same stage where a wide variety of efficient fixtures of good appearance for special purposes are available.

One fixture especially is of interest because of its defense-work significance, according to Westinghouse engineers. A dust-tight unit is used in large numbers in the new gun-powder plants, as well as in many civilian plants where potential dust-explosion hazards exist, such as flour, textile, and cement mills. Government ordnance regulations limit to 228°F., the temperature of any part of a lighting-fixture housing exposed to the powder dust, even when it is under a thick layer of dust. The fluorescent lamp is ideal for this low-temperature work because its size, low wattage, and high efficiency lead to relatively cool operation.

The dust-tight luminaire is built of steel and is shaped like an inverted trough sealed across its bottom by a glass cover with an asbestos gasket. Inside is a porcelain enamel reflector and all ballast equipment, etc., to operate either two or three 40-watt 48-in. fluorescent lamps.

Prior to the introduction of the present 100-watt 60-in. fluorescent lamp—the largest size made—lighting engineers were reluctant to recommend fluorescent equipment for lighting high bays in factory areas. However, since its entrance into the lighting field, these lamps are now effectively illuminating areas from heights of 18, 25, and even 40 ft. Literally thousands of these units are being used in aircraft factories. For example, the new Lockland, Ohio, plant of the Wright Aeronautical Corp. is equipped with over 11,000 such lamps, mounted 18-ft. above the floor. As each unit is 5-ft. long, this is equal to over 10 miles of light—at high level, 30 to 35-ft. candles, and of remarkable uniform horizontal illumination, with high vertical foot candles.

Checks Metal-Pickling Concentrations

The usual pickling solutions normally run about 5 to 6% sulphuric acid, and in the pickling of brass parts the solution becomes contaminated with copper sulphate. The percentage of copper sulphate at times may run as high as 2%. Obviously, the workers must be made aware of the diminishing acid content if they are to maintain uniform quality of work.

This commonplace problem in metal finishing is being met by checking pickling solutions with the solubridge, an instrument developed and offered by Industrial Instruments, Inc., 156 Culver Ave., Jersey City, N. J. This device is just a rugged, simplified, shop-type Wheatstone bridge utilizing the "magic eye" as the indicator of balance, and serving to measure the electrical conductivity of the solution in the desired terms. Readings are obtained directly by turning a knob until the "magic eye" indicates balance. The instrument can be operated by any plant worker, with speed and accuracy. In the case of pickling solutions the readings are obtained in terms of sulpiuhric acid concentration.

Since copper sulphate has a conductivity only 1/10th that of sulphuric acid, the effect of copper sulphate proves negligible. The same checkup technique is being applied to many other industrial solution concentrations where the electrical conductivity can be translated into desired readings. Much time, labor and guesswork are being minimized in these intensified days of National Defense production, by means of the solubridge technique.

Bulletins on Rust-Preventative and Chemical Resistant Paints

Informative illustrated bulletins about "Rust-Oleum" paints have been prepared for distribution to interested concerns by the Rust-Oleum Paint Corp., 1930 W. Grand Ave., Chicago, Ill. Paints in many colors are available for a variety of purposes.

WE DID IT IN 1917-WE ARE DOING IT AGAIN Today
THE Alexander Milburn Company has been serving Government and Industry for over forty years. Milburn spray finishing, cutting and welding equipment saw "action" in World War I and is again today widely used in all phases of our defense activities... in aviation, shipbuilding, transportation, and industry. Equipment by Milburn may be relied upon for superior service under pressure of today's demands for "all out" Defense. Write for complete catalog.
The ALEXANDER MILBURN Company
1402 W. BALTIMORE STREET · BALTIMORE · MD.

To Prolong Life of Material Hose

Since the reported scarcity of rubber, we have become more rubber conscious than we have been in the past. . . . In our finishing department we are having a number of replacements made to our air hose and material hose, and we feel that there should be some way to care for these hose to prolong their service. Our filler is sprayed on and we feel that these hose are not giving us the service they should.

What type of solvent should be used to keep the outside, as well as the inside, of these hose clean? Which solvent will cause less deterioration to the rubber? What method should be used in cleaning material hose where an oil stain is sprayed? What is the recommended procedure in cleaning sealer and lacquer material hose? What is the average length of life of a good quality material hose of these various spray operations?

If it is at all possible for you to answer these questions, your reply will be greatly appreciated. —E. I. Co.

We referred your question to an expert on this subject, who has given us the following hurried reply:

The cleaning of material hose is simple and can be efficiently done with the use of a hose cleaner that sells for about $10.00. See your spray equipment manufacturer.

This unit is attached to the air line (main line pressure) and mounted near the spray booth. To use this unit you fill the cleaner with any solvent or cleaner. Next, blow the hose clear of paint with air only. Now, having cleaned the hose of paint, shut the air off and open the fluid valve to allow solvent to pass into the hose. Then turn the air on, allowing the air and solvent to blast through the hose. Shut off the fluid valve and let only air go through for another 30 to 60 seconds. This will dry out the solvents, leaving the hose absolutely free of paint and solvent.

The outside of your hose may be cleaned with any good solvent and rags. Dry the solvent from the outside with dry rags.

This simple method will work for any materials you may be spraying or flowing through the hose. Any lengths of hose may be cleaned by this method.

The care of your hose regulates the length of service you receive. The type of hose used to carry paint should not be of rubber compounds, but rather of synthetic compounds which will not swell even though submerged in solvents used in ordinary paints or lacquers.

Paint should never be allowed to dry on the inside nor outside of the hose. Paint drying hard inside the hose is about the most detrimental thing that can happen. Hose should never be submerged in solvents or thinners and al-

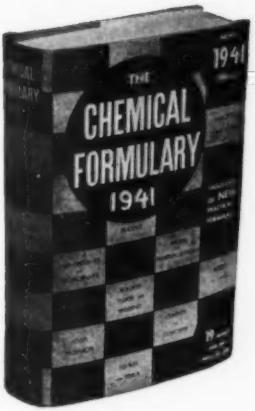
Questions; Answers

Questions are welcome and will be answered promptly by mail. Readers are invited to prepare and send in additional information relating to any of these questions and answers.

The Latest Edition . . .

CHEMICAL FORMULARY

VOL. V



Compiled by a staff of experts

Editor-in-Chief—H. BENNETT (F.A.I.C.)

More than 700 pages (6x9 inches)

Thousands of Latest Tested Formulae From Every Important Industry

Whether you are a CHEMIST, ENGINEER, EXECUTIVE, MANUFACTURER OR LAYMAN—Whatever your manufacturing problems may be, you are sure to find the answer here—authoritatively handled by a specialist and instantly accessible. Throughout, the material has been arranged for quick reference.

NO THEORY—COMPLETE DETAILS FOR ACTUAL PRODUCT FORMULATION

EXAMINE THE TABLE OF CONTENTS

Every One of These Detailed Sections Is Itself the Equivalent of a Useful Authoritative Book.

I. Introduction. II. Adhesives. III. Beverages. IV. Cosmetics and Drugs. V. Emulsions and Dispersion. VI. Farm and Garden Specialties. VII. Food. VIII. Inks. IX. Leather, Skins, Furs. X. Lubricants, Oils, Fats. XI. Materials of Construction. XII. Metals and Metal Treatment. XIII. Paints, Enamels, Varnishes, Lacquers. XIV. Paper. XV. Photography. XVI. Polishes. XVII. Pyrotechnics and Explosives. XVIII. Rubber, Resins, Plastics, Waxes. XIX. Soaps, Cleaners. XX. Textiles, Fibres. XXI. Miscellaneous.

A PARTIAL LIST OF SUBJECTS COVERED

Rubber & Latex
Adhesives
Polishes
Lubricants
Drugs
Farm & Garden Specialties
Resins
Cements & Concrete
Synthetic Resins
Plating
Pyrotechnics
Solders
Welding
Insecticides
Pharmaceuticals
Oils & Fats
Liquors
Dyeing & Coloring
Fluxes
Explosives
Paints
Lacquers
Varnishes
Leather
Skins
Furs
Automobile Specialties
Removing Stains
Bleaches
Ceramics
Enamels
Cosmetics
Marking Compositions
Inks
Soaps
Cleaners
Waterproofing
Metals
Alloys
Glues
Pastes
Fireworks
Waxes
Mildew Proofing
Chemical Specialties
Deodorants
Disinfectants
Laundry Specialties
Dental Products
Etching
Fireproofing
Animal Remedies
Boiler Compounds
Glass
Textiles
Fibres
Beverages
Flavors
Rustproofing
Metal Treatments
Food Products

Improve Your Products! Create New Products!

SENT C. O. D. PLUS CHARGES **PRICE ONLY $6.00**

If check accompanies order, charges will be prepaid to any point in U. S. A.

INDUSTRIAL FINISHING *Magazine*

1142 North Meridian Street Indianapolis, Ind.

1-9-4-?

Some year the war will end.

Swords will be beaten into plowshares, and golf clubs and refrigerators.

There will be a swing back into the things we buy because we like them and not because they are a grim necessity.

You are planning these things now, or should be. Let us plan with you toward the finish for 1942, whenever it is.

We welcome any call for cooperation on long-range planning for the finish of the future.

Meantime, for 1942 and as far as we can see, we shall do our utmost to supply our customers with the best available materials and service permitted by wartime conditions.

The Varnish Products Company

5208 HARVARD AVENUE

CLEVELAND, OHIO

lowed to stand, as it will cause swelling to the outer coating of the hose, which is far below the quality of the inner liner.

A piece of hose should last at least one year with proper care. It is not uncommon to have good quality hose last three years, using the care just recommended and cleaning the hose every night before leaving work.

Every spray operator should be allowed sufficient time every evening to clean all of his equipment and hose. The equipment and hose will last longer and the men employed to use the equipment will enjoy their work. It will reflect in the quality and quantity of work produced. Remember, the first principle of a good painter is a "clean house."

Fire Retardant Paint

EVEN in ordinary times there is much interest shown in paints or paint-like coatings that are designed to help prevent damage to woodwork by fire. Now, in view of conditions in many parts of the world, the interest in fire-resistant coatings is greatly intensified. Through continuous research and experimentation, both in this country and abroad, much has been accomplished toward the development of reasonably fire-retardant paints. However, much remains to be done, particularly as regards the production of a paint that resists fire and, at the same time, retains the characteristics for which paint is commonly used — long-lasting surface protection against weather and continued good appearance.

Those who are most closely connected with the development of these special coatings know that there is no such thing, right now at

I. C. D. FORMULA NINE
« wax free REMOVER »
for paint, varnish, lacquer, baked enamel, cement, etc.
in defense production use
NON-INFLAMMABLE—EASY TO APPLY
. . . NO AFTER-CLEANING

I-C-D FORMULA 9 is safe, non-inflammable and wax free . . . can be brushed or sprayed . . . Doesn't raise grain nor discolor . . . it costs less to use . . . saves time, labor and material . . . Prompt deliveries to manufacturers with PRIORITY RATINGS.

DEFENSE PROTECTIVE COATINGS—I-C-D Labs. have specialized in formulating and manufacturing non-inflammable protective coatings. If you have a tough defense protective coating problem send in your specifications and requirements for quick action. Write today.

INDUSTRIAL CHEMICAL DEVELOPMENT CORP.
111 MADISON AVE. NEW YORK, N. Y.

least, as a really fireproof paint. The best that can be expected is a coating that will resist or retard damage to wood by fire. The search is not for a paint that, by itself, is unaffected by fire. Rather, the experimenter is looking for a paint that will prevent fire damage to woodwork. In this respect, this sought-after paint should perform exactly the same service as ordinary paint which takes upon itself the slow and steady destruction by the elements which would otherwise fall upon the wood the paint covers.

The characteristics that, in the light of present knowledge, appears to be most desirable in a fire-retardant coating is the ability to intumesce—an action that somewhat resembles the puffing up of a common paint film to which paint remover has been applied. When a flame strikes a coating having this characteristic, the surface of the film puffs up and forms a spongy sheath which may range in thickness from ⅛ to ¼-in. This puffing-up converts a part of the paint coating into an air-filled insulator (with possibly some carbon dioxide content) that holds the actual flame away from the underlying wood. Since gases are very poor conductors of heat, the flame does not have a chance to act on the wood to distil out of it certain gases which are the first to burn and which enable the loss volatile elements of the wood to burn subsequently.

For fire to spread, the heat of the applied flame must be great enough to drive out and ignite the wood gases, which in turn provides more heat which attacks the structure of the wood. Thus we know that if a coating can intumesce

Carry on with quality *today . . . use*

KILNVAR *. . . for speed of production!*
. . . for durability of finish!

Scores of furniture manufacturers who have replaced lacquer with the new Bakeseal-Kilnvar finishing system are carrying on today with **both** speed and quality. They have gladly welcomed into their finishing room production: (1) BAKESEAL—the tough, full-bodied undercoat that seals quickly, provides a proper foundation for enduring finish and (2) KILNVAR—the new varnish-type finish that assures lasting depth, offered in Gloss Rubbing, Semi-Gloss or Flat effects.

Designed for use together, both materials are adapted for air drying or forced drying. The Schaefer representative in your territory has the interesting facts. Ask him for them!

THE SCHAEFER VARNISH CO., Inc.
Louisville, Kentucky

when a flame is directed against it, actual contact of the flame with the underlying wood is delayed, if not prevented, by the air-filled insulator.

With the foregoing discussion of the most desirable characteristics of a fire-retardant coating in mind, it is not hard to understand why some types of presumably fire-resistant paints have failed of their purpose. For example, special paints based on powdered alum and asbestos ground in a linseed oil and turpentine vehicle have proved unsatisfactory because they did not intumesce.

Other paints containing borax and raw oil or varnish have been tried and with some success. The use of borax in paint is, however, open to the objection that it is soluble in water and is washed out of an exterior paint film by repeated rain storms. A paint such as this would therefore need frequent renewal. Other paints based on sodium silicate or sodium silicate-linseed oil combinations, have been tried. Here again, there was lack of durability on exterior exposure, due to a tendency of the film to check badly and to removal of the silicate by leaching.

Among the most successful fire-retardant paints so far developed by the U. S. Forest Products Laboratory in Madison, Wisc., is one which consists of 41% basic carbonate white lead, 32% borax, 22.8% raw linseed oil, 3.6% turpentine and .6% japan drier—all percentages by weight. This paint utilizes the fire-resistant quality of

borax and combines with it the adhesive property of white lead. And, of course, this paint will intumesce. Maximum fire protection with this type of paint is secured by giving the woodwork a very thick film, three or four coats, with the coverage about 125-sq.ft. per gallon.—DUTCH BOY PAINTER.

To Remove Scratches on Glass

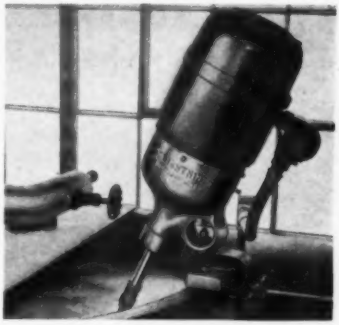
SCRATCHES on glass may be eradicated by using a paste made of glycerine, water and rouge (iron oxide) mixed to the desired consistency. A hard felt pad is dipped in this paste and rubbed briskly back and forth over the scratched surface until the markings disappear. The paste can be washed away by simply flushing with water.

This paste is particularly suitable for removing shallow scratches. Deeper gougings require more specialized treatment and coarser abrasives to start with. For this latter purpose emery powder will often serve, and glycerine makes a satisfactory medium in which to suspend the powdered abrasive.—GLYCERINE FACTS.

Improved Color Scheme for Machinery

A NEW COLOR SYSTEM for painting machinery—one that reduces eye fatigue and promises to increase production—was reported at the Atlantic meeting of the Illuminating Engineering Society on September 25, 1941

Arthur A. Brainerd, of Philadelphia Electric Co., and Matt Denning, of the Finishes Division of



Direct Drive "LIGHTNIN" Portable Mixer used for maintaining proper consistency and suspension of pigment in a special enamel. Where colors vary frequently and quantities are not too large, this type of agitator can be conveniently changed from one tank to another.

KEEP PIGMENTS IN UNIFORM SUSPENSION AND REPLACE EVAPORATION LOSSES WITH A "LIGHTNIN" MIXER

With primer dipping tanks operating 24 hours a day, consistency must be constantly maintained in the quickest, most dependable manner . . the reason more "LIGHTNIN" Mixers are being specified than ever before.

The powerful "LIGHTNIN" Double Mixing Action drives pigments up off the tank floor and keeps suspension uniform. The complete bottom-to-top turnover plus a slow rotating which completely eliminates dead spots thoroughly mixes in thinner to make up for evaporation losses.

If you have a problem keeping pigments in suspension or keeping consistency uniform, consult us. Our specialized mixing experience is yours for the asking.

MIXING EQUIPMENT COMPANY, INC.

1027 GARSON AVE. ROCHESTER, N. Y.

PULMOSAN
M3C RESPIRATOR

FOR PAINT SPRAYING

50% EASIER BREATHING
•
LIGHTER WEIGHT
•
HIGH SAFETY
•
LOW COST

A new and better value in respirators to protect spray men. Order an M3C today—or write for details.

PULMOSAN SAFETY EQUIP. CORPORATION
Dept. IF, 176 Johnson St., Brooklyn, New York

Assures Better and Faster
FINISH BAKING

The proper finish baking oven will improve results, eliminate rejects, speed up production and cut costs. See Despatch for proper recommendations and the proper oven for better and faster finish baking.

FOR DEFENSE

A DESPATCH OVEN BAKING FINISH ON MOTORS

WRITE FOR DETAILS
DESPATCH OVEN COMPANY
MINNEAPOLIS, MINNESOTA

the Du Pont Co., gave collaborative findings of a 2-year investigation into "Improved Vision in Machine Tool Operators by Color Contrast", which they said developed surprising results.

Studies of how brightness and contrast in paint colors on machinery combined to increase the accuracy of seeing, thus reducing accident hazards, providing more comfortable working conditions, and also increasing production, were presented in a color motion picture.

Many colors possessing higher light-reflecting factors than the conventional dark green or battleship gray of machine tools were tested under actual plant conditions, it was explained. Aluminum, light gray, light green, light blue, yellow, and light buff coats were applied in turn to a punch press and a power shear over periods of two weeks. Photometric readings were recorded of light falling on and reflected from working surfaces while time studies were made of production rates. Separate records were kept of the research under both incadenscent and mercury lighting.

The psychological effect upon the operators, consisting of 15 men, including two foremen, was determined by a simple questionnaire. Results of the brightness measurements, the time studies and the questionnaire were correlated.

Ratings on the basis of 100 showed light buff and light gray with the highest scores, aluminum standing very high and light blue showing promise.

In order to render the results practical from a maintenance standpoint, a compromise was made by painting all machines in "horizon gray" and "spotlighting" the working area with light buff. Sur-

PRIORITY ORDERS

Manufacturers of products with Priority Ratings interested in quality finishing materials are assured of prompt deliveries, good service and a reliable source of supply.

- BAKING ENAMELS
- BLEACH
- FILLERS
- STAINS
- SHELLAC
- LACQUERS
- SYNTHETICS
- VARNISHES
- ENAMELS

Write us about your finishing problems, schedule and requirements and ask for working samples.

NEW PERIOD

NEW YORK WOODFINISHERS' SUPPLY COMPANY, Inc.

304—8TH AVENUE NEW YORK, N. Y.

Factory—Brooklyn, N. Y.

NEW PERIOD

prisingly, the combination seemed to perform better than any of the solid colors.

Field investigations are currently being conducted in several industrial concerns and more complete data should soon be available, the illuminating engineers were told.

Conveyors Streamline Production Layouts

ONE OF our friends, who is identified with a large and progressive concern that designs, manufactures and installs conveyors, has written us an interesting and informative letter which contains the following timely paragraphs:

"In the metal finishing industry, our conveyor work has been largely governed by the thoughts of the oven, spray booth and washer manufacturers. Although we are well informed as to the new and up-to-date methods in this field, we feel that the spray booth and oven manufacturers can give you a more detailed resume of the advances in metal finishing and preparation industry.

"In the furniture industry, the reverse is true. We, as a conveyor manufacturer, developed the new, streamlined method of furniture finishing. . . . It fell upon our shoulders to design and recommend the accessory equipment which was necessary for a complete installation.

"Developments in the furniture finishing field have been so gradual over a period of six or seven years that it is hard to point to any one outstanding development

PREP-WASH

A New Arrival

IN THE "PREP" FAMILY

PREPWASH, the new addition to the "PREP" line of cleaning products, is a departure from previous methods — more effective and safe than alkali cleaning and emulsion types of cleaners — More effective and economical than solvent cleaning. With PREPWASH, present washing machine equipment can be used in preparing metal surfaces for paint. The PREPWASH process thoroughly removes oils and greases and forms a paint-receptive microscopically etched surface, providing thereby a better paint bond. WRITE FOR LITERATURE.

Introducing
A NEW CLEANING METHOD

Other "PREP" Products:
METALPREP
PREPRITE
GALVAPREP

Windsor, Ontario — **NEILSON CHEMICAL COMPANY** — Los Angeles, Calif.
6564 Benson Street — Detroit, Michigan

for the year 1941. Prior to the government restrictions on materials going into synthetic finishes, great strides were being made in fast drying, tough and durable materials which would out-mode the varnish and lacquer methods.

"The picture changes abruptly with the curtailment of basic materials for the new synthetics and we, as a conveyor manufacturer, must be in a position to change and alter our existing installations to meet the requirements which will be necessitated by the use of substitutes.

"I sincerely feel that OPM should grant priorities to furniture manufacturers for the materials necessary to alter and change existing installations, because the many manufacturers who have converted their plants to streamlined production would find themselves operating in a very cumbersome and inefficient manner. The government's request that we streamline our endeavors to do away with all existing inefficiency makes it seemingly necessary to allocate materials for the revamping of existing conveyor installations.

"I feel that our government has not taken advantage of the alert and excellent managerial abilities of the furniture industry and that they could use to good advantage, in the selection of defense plant operations, the many outstanding organizations of which the furniture industry can boast."

It is significant that conveyors are being extensively used in con-

nection with the painting of various products now being manufactured for use in our country's defense and war activities.

Breakfast Suite Finish

HERE is an attractive color finish schedule for a high grade breakfast room suite or other painted furniture of the type that is well made and smoothly sanded.

Over the smoothly sanded wood surfaces, spray a thin coat of lacquer sealer (thinned in the proportion of four parts of sealer to one part of lacquer thinner). When dry (within about an hour) sand all parts to a smooth surface. Dust off and clean the surfaces thoroughly.

Spray on one coat of burnt-orange lacquer enamel. Cut this material very thin, so as to avoid getting a heavy body coat. Without sanding, proceed with what decoration and striping is to be done. This might be in black or dark green. Spray on a light even coat of lacquer sealer.

Now, to get the desired decorative effect—that is, to soften or subdue the sharply defined bright colors—glaze the painted surfaces with a dark brown glazing color (VanDyke brown and drop black in japan). Wipe out and brush to the desired effect. When completed, the surfaces should show a soft shaded-out effect. For the final coating spray on an even coat of flat lacquer and rub and wax.

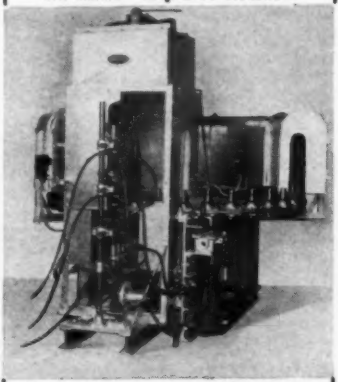
Note: In using lacquer enamels get the surface perfectly smooth before applying the enamel. Use lacquer sealer on the white wood; this will allow the lacquer enamel to "knit" into the sealer coat. By using a light coat of lacquer enamel, there will be no danger of the finish pealing or chipping off. Even

SPEED UP WARTIME Production!
WITH THIS NEW
Cesco No. 94 RESPIRATOR

★ Full U. S. Bureau of Mines Approved (No. BM-2142) against Type A (Silica), Lead and Nuisance Dusts. Equip your workers with this new COMFORTABLE and SAFE Respirator for FASTER DEFENSE PRODUCTION. It's the "Cesco No. 94." Write

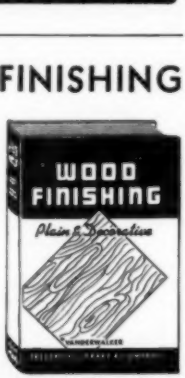
Chicago Eye Shield Co.
2367 Warren Blvd. Chicago, Ill.

Automatic and Manual
SPRAY EQUIPMENT



Let us know your requirements.
ECLIPSE AIR BRUSH CO.
392 Park Ave. Newark, N. J.

WOOD FINISHING



A Book of Formulas and Detailed Instruction Method, Tools and Materials, Period Finishes, Staining, Filling, Varnish, Painting, Enameling, Glazing, Lacquers.

WOOD Finishing in General; Preparation of New and Old Surfaces; Stains in General; Factory Prepared Stains; Water Stains; Aniline; Chemical Water Stains; Color Pigments; Dyewood; Spirit Stains; Oil Stains; Stain Mixing; Brushing and Procedure; Wood Fillers; Varnish and Shellac; Varnishing, Rubbing, Polishing; Varnish Defects; Lacquers; Wax and Oil Rubbed Finishes; Trim; Working Operations; Woods; Brush Graining; Decorative Wood Finishes; Repairing Damaged Finishes.

360 Pages, Cloth. Price.....$2.00

INDUSTRIAL FINISHING
1142 N. Meridian St. Indianapolis, Ind.

if the coat is so light that the under wood shows slightly, this will be taken care of when the glazing has been done.

This system cannot be used with satisfactory results on uneven, unsanded surfaces; in other words, not on the cheaper grade of furniture.—F. W. WORTH.

Antique Reproduction in Furniture

THE PRODUCTION of a real antique finish is finding a large market today. It is used mainly on case goods, although we see it used in a limited way in the novelty line. It is produced mostly in Colonial and 18th Century mahogany colors. The final effect must show a soft mellowed appearance, plus the marks and scars that naturally would come from long service.

As to the kinds of woods used, these are numerous. Mahogany and walnut are used a great deal but you will also find maple, beech, birch, hackberry, gum, ash and cherry.

The base color is usually produced with a non-grain-raising stain of a mellow amber color; sometimes it runs to the yellow side. On open-pore woods the next operation is to apply filler, which can be almost any color to fit the desired shade you wish to obtain—from cold grey brown on French colors to a warm Van Dyke brown on 18th Century colors.

After the filler and wood around it have become thoroughly dry—usually over night—you apply your stain, padding or highlighting it, which will accentuate the glaze and give it more transparency and less muddiness. To perform this operation you use a regular non-grain-

raising stain that is close to the color of your glaze, and apply it lightly with a brush. Then, with the stain reducer, pad this and "feather it off" around mouldings, etc. With the same stain on a pick brush, spatter a few simulated fly specks over the piece.

Next, use a "distressing" tool, which is nothing more than a wooden mallet with a chain nailed on the face of it. With this, you mar the surface lightly; also you can use crayon to simulate surface scars.

Then apply a glazing sealer, which can be tinted or not to suit your color. After this is dry you are ready to apply a glaze. You will have the best results with a long-oil glaze, as the brush blending is very important in producing a mellowed finish.

When this glaze coat is dry, you are ready for the sealer and top coats. Then rub with steelwool and wax, usually grey wax for French styles and brown or black for 18th Century colors. If care is taken with the above procedure you should have a beautiful mellow finish that appears to be hundreds of years old.—HAROLD DEAN.

Letters from I. F. Readers

(Continued from page 8)

any suggestions as to the equipment necessary to finish in this manner? I shall appreciate any information or assistance you can give me.

Do you think lacquer would work better than enamel?

We are sending you sketches of the parts we wish to finish. These will be of hardwood.—U. Mfg. Co.

These pieces might be finished by tumbling—or by a "whirl" enameling machine. We are sending you further information about both methods—information previously published in this magazine.—ED.

Provides easy-to-wear comfort and safety against vapors of paints, lacquers and enamels encountered in spraying; such as turpentine, petroleum distillates, acetates, coal tar derivatives, alcohols, etc. Cartridges quickly replaceable. Bulletin EM-3.

MINE SAFETY APPLIANCES CO.
BRADDOCK, THOMAS and MEADE STS., PITTSBURGH, PA.
District Representatives in Principal Cities

Power Graining Machine

1. **Cycle time 25 seconds.**
2. **Will cover a surface up to 31" x 80".**
3. **Automatic roll cleaner.**
4. **Cuts production costs.**

AMERICAN RICHWOOD PRODUCTS CO.
(FORMERLY AMERICAN ELECTROTYPE CO.)
Graining Plate Division
104 E. MASON ST. MILWAUKEE, WIS.

LACQUER and SYNTHETIC ENAMEL FINISHES

By Ray C. Martin

The author takes up the raw materials that enter into the manufacture of these important finishes and includes laboratory formulations and testing, manufacturing methods, requirements of many types of finishes for various industries and products, methods of analysis, methods of applying finishing materials, chapters on furniture finishing and automotive finishing, a glossary of terms used in the industry with clear explanations of what they mean, and an alphabetical index of subjects covered in the book. Price $5.50 postpaid; cash with order.

Order from

Industrial Finishing
1142 N. Meridian St.
Indianapolis, Indiana

526 pages.

6 x 9-in.

Over 100 illustrations.

Price $5.50 postpaid.

Flow Meter to Measure Material Used

We are wondering if there is anything on the market such as a flow meter, or any other equipment that can be placed in a spray hose to register the amount of material being used.

We have in mind some form of equipment that could be inserted in a spray hose before the material reaches the gun, and as the material passes through this equipment it would register the amount. In other words, we would like to know how much material is being used in spraying a certain number of tables or chairs.—E. Co. (Chair Mfrs.).

Flat Varnish

I wish to get some information about flat varnish finishes. I am under the impression that flat varnish was developed to give furniture a dull rubbed appearance, yet without doing any rubbing. My question is whether this is true and also whether or not rubbing a flat varnish finish is practical; or was flat varnish ever intended to be rubbed? Any information will be greatly appreciated.—K. F. H.

Your first impression is correct. Flat varnish is intended to give furniture, or whatever it is used on, a dull-rubbed appearance. It isn't intended to be rubbed.—ED.

Makes Wallboard Finish

We note, in the December issue of INDUSTRIAL FINISHING, an inquiry from N. E. Co. regarding wallboard finish.

We have been manufacturing all types of finishes for this purpose for several years and would like to have the name of this inquirer so that we may contact them direct.—The Monroe Sander Corp.

Information furnished.—ED.

Likes Chester's Article On "What Finishes We Have"

Needless to say I read with considerable interest the outstanding article by H. W. Chester, beginning on page 64 of the January issue of your most informative INDUSTRIAL FINISHING. This article would do credit to a graduate chemist.

Furniture manufacturers and varnish, stain and lacquer manufacturers,

as well as their representatives, mutually benefit from such expressions of intelligent understanding and co-operation — needed particularly now under the present priority situation.

When Mr. H. W. Chester so ably expressed, in his straight forward manner, present conditions, I am wondering if he gave even a passing thought to what extent, if any, he was indirectly benefiting his fellow foreman finishers.

As an illustration, let us, for the moment, consider the problem of the modern furniture factory operating on a mass production basis. For such an organization to keep out of the red in its highly competitive field, its very lifeline, the conveyor, must creep along steadily without interruptions in order to meet their exacting shipping schedules.

The force-drying heating units, with their intricate controls of heat and relative humidity, exercise a definite influence upon the color, build and final drying of the stains, fillers, sealers and top coaters. All of these elements require the close attention of experienced technical minded foremen finishers or, better still, the superintendent of finishes.

The modern foreman finisher, who has been so well demonstrated in H. W. Chester's article, is a man of character, honesty and ability, in addition to his daily duties. He is called upon to make selections among the many finishes offered. Usually he must select the one outstanding product that lends itself best to his particular setup. When competitive tests are made by this type of man, friendship ceases (as in a game of poker). The lucky salesman that sells the winning article obtains his business. Clean competition makes for better business.

The importance of the proper selection in finishing material has well been illustrated by a sign hanging on the wall of a large furniture manufacturer's shipping room, where all furniture is inspected before shipment. "Remember we pack our reputation in every carton."

Gone are the days of the entertaining salesman who breezed into the finishing room to greet the finisher with that old familiar slap on the shoulder and the ready cigar as usual, accepting in turn a friendly chew of tobacco from the finisher's supply, and thereafter comfortably perching himself on some improvised seat where he proceeded to tell a new and funny story. Finally he left after taking up considerable time and offering a very personal secret formula.

Today the service salesman calls on the foreman finisher to exchange first hand information between his laboratory and the foreman finisher. Heating unit controls are checked if necessary to see that uniform quality is

DEFENSE PRODUCTION

MANUFACTURERS of defense products with rigid and exacting specifications will find a quick solution to their finishing problems in Bristol production finishes. Leading manufacturers in the illuminating and other fields are standardizing on Bristol's protective coatings.

- SEALERS
- PRIMERS
- LACQUERS
- SYNTHETICS
- CLEANERS
- SPECIALTIES

Working samples and prices sent on request.

Bristol Lacquer & Chemical Co., Inc.

BRISTOL, CONN.

Airflo IT'S THE BUY

PORTABLE PAINTING OUTFITS

Never such dependable performance, such impressive standards of quality and stability in low priced equipment . . . Unsurpassed air output, "Oiled for Life" N-D bearings, dual blower system, twin air cleaners . . . Try, then buy AIRFLO at new low prices.

CROWN SPRAY GUN MFG. CO.
1218 Venice Blvd., Los Angeles, Calif.
Warehouses in Principal Cities

The 4-Star Line

***RAYCOTE**
***KINGCOTE**
***RAYMIX**
***SPANGLES**

A FLOCK FINISH will solve your problem!

Don't give up because of shortages! Turn to flock finishes. For softness, lustre and relief effects, use flock. Our 4-Star line of rayon, cotton and cellophane flocks affords wide selection.

Send for Samples. Dealers Wanted.

Rayon Processing Co., 862 Tremont St., Central Falls, R. I.

maintained. New products, if any, are discussed. Sheens are adjusted if necessary, either by making a change in the product sold or by a correction in the abrasive used for rubbing—to produce different effects to meet changed demands.

It is finishing foremen like H. W. Chester that make these constructive and beneficial business relationships possible—where materials are selected and used only after the most careful and exacting tests, and where each article of finish must stand on its own merit, and prove its actual worth before it is adopted.

H. W. Chester has my hearty congratulations.—W. F. Dentzer, Southern Representative, P. P. & C. Co.

"Liganto", Liquid Glove

Thank you for your kindness in publishing the item about "Liganto" in Dec. 1941 issue, page 54. As a matter of fact, "Liganto" is not a hand cream but a liquid which, after drying, forms a glove-like film. This would not be possible with a hand cream. "Liganto" is a skin protector. —Simplex Chemical Corp.

Luminous Paints

Can you give me the name of a manufacturer of luminescent paints for coating objects so they will glow in the dark?—B. W. R.

Information supplied.—ED.

Grained Wood Caskets

Would you kindly put us in touch with some organization or person who is familiar with the process of producing dull and glossy artificially grained wood finishes, as we are desirous of establishing a department for the production of this type of work. We would appreciate your cooperation very much.

P. S. As an elaboration to the above, would say the finish referred to is used by several eastern casket manufacturers and is classified in the trade as polished wood. The wood we plan to use is redwood, artificially grained to simulate walnut, mahogany, etc.—P. S. Co.

Wood Bleaching

Kindly address and mail the enclosed letter to Mr. John F. Wagner, who was the author of an article on "Wood Bleaching" in your November 1941 issue, pages 85 and 86. The letter gives him information on a bleaching process developed by me, which has been successfully used for the past six months by an interior fixture manufacturer here.—J. P. G.

Want Metal Filler, Too

In reading the November issue of INDUSTRIAL FINISHING, we find an article on page 4, pertaining to "Metal Filler." We also bake our metal cabinets and would appreciate it if you could furnish us with the information as to the filler that could be used.—M. S. Co. (Hospital Aseptic Steel Equipment).

Black-Out Light

I just read Carl W. McNeil's article on page 29 of December issue of INDUSTRIAL FINISHING. We are making a black-out light, or getting ready to. I wonder who makes the paint or lacquer into which we could dip the bulb and head of the flashlight so that it conforms to black-out demands? Could you help us —X. Co.

Can someone recommend a suitable material for this?—ED.

Reflecting Paint

Would you please send me the name and address of any firm that manufactures a paint which would reflect the light of the head lamps of an automobile at night at a distance of 500 to 1000-ft.?—A. A. (Sign Painter).

Blackboard Paint

In January 1942 issue of INDUSTRIAL FINISHING, on page 4, we note that someone is inquiring about a blackboard paint. We manufacture such an article and will be glad to write the company and forward them a sample.—The Excelsior Varnish Works, Inc.

Prevent Sweating Pipes

We notice an article on page 5 of December issue of INDUSTRIAL FINISHING regarding a coating known as "Insulmat" which prevents sweating pipes. We would like to get some further information on this subject.—M. Mfg. Co. (Decorated & Plain Tin Boxes).

Write J. W. Morteil Co., Kankakee, Ill.—ED.

50,000 Springs Daily

Could you recommend one or more makers of spraying and baking equipment adapted to the finishing of at least 50,000 springs per day, of the type shown on our drawing No. A-1015? (closed coil spring, ¾3½-in., ⅛-in. wire, with hook at each end.)—X. Z.

Electric Knife Heater

Positively guaranteed against overheating—even if current is left on continuously—will not burn cut—knives can be taken anywhere.

Current consumption less than 5c per day if used continuously all day. Specify voltage desired. 110, 120, 220, 240 volts. Price $6.50.

OP-AL Electric & Mfg. Co.

Indianapolis Indiana

Why your Red Cross now needs

FIFTY MILLION DOLLARS

Every dollar that you give now to your Red Cross marches into the thick of things where humanitarian help is needed most—up to the fronts and battle stations where the fighting is heaviest. And throughout our broad land to train and equip volunteers to meet any emergency that may strike.

How this War Fund is Used

SERVICE TO THE ARMED FORCES $25,000,000

Provides for the care of the Army and Navy, including services to men in hospitals and during convalescence. • Provides an important link between the service men and their families. • Provides essential medical and other supplies outside of standard Government equipment. • Operates Red Cross headquarters at camps and naval stations. • Enrolls blood donors and medical technologists for Army and Navy needs. • Provides millions of surgical dressings, sweaters, socks, etc. through volunteer workers.

DISASTER AND CIVILIAN EMERGENCY RELIEF . . $10,000,000

Supplies emergency needs for food, clothing, shelter and medical attention for disaster victims. • Assists stricken families in repair of homes and other adjustments; provides minimum reserves of essential relief supplies to prevent unnecessary delays.

CIVILIAN DEFENSE SERVICES . $ 5,000,000

Trains volunteers for home nursing and nurses' aides. • Trains nurses, men and women, for active duty with the Army and Navy. • Trains volunteers in First Aid and accident prevention, in Motor Corps, Canteen and Production. • Organizes for evacuation of children and their families from stricken areas. • Assists Red Cross Chapters in establishing effective coordination of emergency relief.

SERVICE AND ASSISTANCE THROUGH CHAPTERS . . $ 4,000,000

Gives assistance and service to the 3,740 Red Cross Chapters with their 6,131 Branches responsible for local Red Cross activities.

OTHER ACTIVITIES AND CONTINGENCIES . . . . $ 6,000,000

New activities made necessary by unexpected developments.

TOTAL $50,000,000

THE AMERICAN RED CROSS $50,000,000 WAR FUND

Note to Red Cross Canvassers: Use this material to better inform contributors how their donations are being expended.

This space has been donated free by the publisher of Industrial Finishing Magazine.

Industrial FINISHING

Distributed monthly to finishing room and paint shop foremen, production superintendents and company officials of metalworking, woodworking and miscellaneous industrial plants where production finishing is a major operation in parts and products manufacture.

•

Published the 18th of each month by
PRACTICAL PUBLICATIONS, Inc.
1142 N. Meridian St., Indianapolis, Ind.
Telephone.....Riley 6771

•

President and Editor.....W. H. Rohr
Vice Pres. and Adv.-Mgr.....E. A. Dosch
Secretary-Treasurer.....R. E. Suits

•

Subscription Rates Per Year
U. S. and Possessions.....$2.00
Canada and Foreign Countries.....$3.00
(No subscription solicitors are employed)

Editorial

Real Production Experts Now in Demand

With certain kinds of labor and materials becoming higher priced and more difficult to obtain, manufacturers are faced with the serious problem of accomplishing more with less—when and if this is possible. In nearly all manufacturing establishments a certain amount of laxness eventually develops and, quickly and unnoticed, certain elements of inefficiency and wastefulness creep in. These are likely to increase and finally become the routine procedure.

In time, the management may awaken to the fact that something is wrong, probably when it sees competition producing better finished goods for the same price or even for less. Often the department foremen and production management are so close to and so accustomed to the usual routine in their own plant, and perhaps so out of touch with what is going on elsewhere, that they cannot see what is wrong; or, if some of them can understand the situation, they haven't the courage, ability or tactfulness to clearly point out remedial measures to the head of the concern. Petty jealousies often are in the picture to aggravate the situation and to prevent a satisfactory change from being planned and carried out within the organization.

One plan that can be productive of results is to call in a competent and experienced industrial engineer, preferably one who is familiar with the type of work being done. The very strangeness of the place will be in his favor. He will take note of everything—building space, equipment, arrangement of facilities, production methods, production schedules and, above all else, the personnel. How long he stays at the plant will depend upon what the management wants accomplished. He may finish up in three days or it may take three months. An experienced engineer of this kind is in position to design and draw plans and specifications for a complete streamlined conveyorized production setup and to supervise its installation.

In this connection, we are reminded of a letter written to us

this year by the president of a manufacturing concern which is now in its 70th year. Quoting from his letter:

"We have read with interest, your magazine for a number of years, and we are putting a question up to you in the hope that you may help us.

"Do you know of any individual who we might call in as a 'doctor' for our finishing room? Someone skilled in layout, methods and costs, who would work on a fee basis such as any industrial engineer?

"Of course, we'd want someone who had no axes to grind, who is not connected with any particular finishing material company, nor any . . . equipment company.

"We are anxious to get hold of such a man, to have him come into our finishing room and criticize us and show us how we can better ourselves.

"We would appreciate anyone you could suggest. . . ."

Fortunately INDUSTRIAL FINISHING knew of two or three men qualified for this work, and one of those we recommended was hired for the job. We believe that there will be more demand for services of this type in the near future—and we feel sure that qualified representatives of outstanding manufacturers of finishing equipment and finishing materials can do some splendid work along this line.

92% on National Defense

How many products, formerly designed, built and sold to manufacturers of exclusively civilian goods, are now well into the war production picture is emphasized by a letter from American Air Filter Co., Inc., and signed by Mr. J. R. McConnell, Vice President. Mr. McConnell gives us permission to quote his letter which is as follows:

"We have your letter in regard to the annual review of new finishing equipment in the February issue of INDUSTRIAL FINISHING and are sorry that we cannot take advantage of this opportunity to feature some new equipment.

"The truth of the matter is that for the past eight months we have been operating our two plants from 16 to 24 hours a day to furnish our standard equipment for defense projects. For the past four months more than 92% of our entire output has been for National Defense. Under the circumstances we have not had the time nor the inclination to introduce any new products. Our Research Laboratory has been going full force but all the new ideas that have been developed are being put aside for introduction after the war is over."

We believe that what is stated in this letter is typical of the picture in many other establishments that manufacture equipment used in connection with product cleaning, painting and drying.

Conveyorization Is Being Extensively Adopted

With manufacturers facing a shortage of labor and rising costs plus the difficulty, undesirability or impossibility of acquiring additional floor space, the adoption of mechanical handling equipment becomes a logical step. Conveyors have many possibilities. They are the means of keeping products off the floor and off trucks where, during the course of cleaning,

painting or drying, they would be more subject to frequent damage. In this connection, we just received the following note from one of our correspondents in Illinois:

"One large concern that manufactures upholstered furniture not only conveyorized their finishing department in their new plant, but also their upholstering department as well. The conveyor starts at one end of the building, where carvings are attached to the frames; then proceeds into the finishing room through special spray booths and continues completely through the upholstery department where all operations are performed on the moving conveyor. It is a straight-line endless conveyor. No pieces are taken off until completed. There are two lines for davenports and two for chairs."

This is typical of what is being done in hundreds of other factories — which reminds us of the January 28 letter from an advertising, marketing and management agency in Chicago. Addressing the Editor on the subject of conveyors, this company writes:

"We are building a file on conveying equipment and similar material-handling devices, and would appreciate it very much if you would let us have copies of articles discussing material handling or conveying equipment which have appeared in your magazine during the last 18 months.

"We are trying to establish this on the basis of a fairly complete and, we hope, intelligent, research study of this field, and would appreciate any suggestions you could give us as to the best way for going after this data to obtain all available information both as to markets and methods."

While INDUSTRIAL FINISHING isn't a conveyor magazine, we were able to send this agency tear sheets of a considerable number of illustrated conveyor articles, most of them describing actual conveyor installations in the finishing departments and metal cleaning rooms of a variety of successful manufacturing plants. So we say, in conclusion, "Look for more conveyorization in industry, especially in all phases of finishing."

Aircraft Finishes

★ It seems to me that most of the finish manufacturers have already developed some new, timely substitutes, or have found a new field for something they have been trying to push, which they would be glad to have you tell about.

Let's take aircraft: Fabric dopes have been simmering gently in their own grease since 1920 without even a bubble of an innovation to break the surface—until during the past year. Wooden propellors have come into the limelight with a bang. One plant has 190 men on a 24-hour basis making about 90 different types—which were, until the last year, finished with four brushed coats of spar varnish. A new lacquer type finish can be applied in one day; it equals or bests the varnish in durability and actually improves the efficiency of the prop. by revving it up in speed due to lowered air friction.

The literally onrushing prospect of wooden, resin-bonded plywood for skin surfaces on military air-

★ **Guest Editorial . . . Many readers can write an excellent editorial — two or three paragraphs that present a timely suggestion or valuable idea which will stimulate real thought on a live subject. The Editor welcomes guest editorials and pays for those that are published.**

MARTIN VARNISH CO.
900 West 49th Place · Chicago
• LACQUERS
• ENAMELS
• VARNISHES
• SYNTHETICS
SPECIALISTS IN SPECIFICATION FINISHES

craft has the finish people—Washington as well as the manufacturers—right up on their ears on the matter of a finish for it.

We have the "Single Mission" type of camouflage paints which are water-soluble and with which aircraft is painted, used, washed off and repainted a different color, all within a few hours. — W. T. SMITH.

Possibilities of Substitutes

* Substitutes (some prefer the word "alternates") and camouflage are the "order of the day" in civilian production. First, steel, if or when one can get it, will be used in place of brass; and substitutes for plating will serve as protection against rust and for appearance.

Probably high-temperature baking japan, both gloss and dull, will be the first considered coating for steel, because of its availability and comparative low cost.

Then other coatings, already developed by the foresighted, in both air-drying and baking types, will be used to impart to steel the appearance of brass, copper, aluminum, etc., with the attendant protection against rust.

Second, wood, supply unlimited, will take the place of steel, where practical. The finishing of wood affords an unlimited number of finishing schedules, emphasizing its natural beauties. Also, it can be given attractive metallic effects with coatings that contain no metal. Those concerns that have been outstanding in the past, in wood finishing, are the logical sources of supply for finishing materials in the present emergency. — A. J. BEECHER.

CAN'T GET LACQUER?
Don't Worry—use
SUPER-KAMEX Sensational FINISH
Has twice the solid content of Lacquer and dries just as quick. Try it for speed and economy. Solvents now obtainable. FREE—Write for sample and proof-panel.
M. L. CAMPBELL CO.
706 East 19th St. Kansas City, Mo.

Wood Finishes; Varnish

* There will be a swing of wood finishes, especially on wood furniture and other such non-military articles, back from lacquers to the varnish-type of finish. Lacquer solvents, the alcohols, aromatic hydrocarbons and some ketones and esters, the backbone of any lacquer solvent—are on the restricted list. Nitrocellulose is probably soon to follow.

Turpentine and petroleum are two things of which we have a pretty adequate domestic supply. Fossil resins, which have been sliding into the discard rapidly for several years are—though largely imported—in pretty good stock and

ORDER A MASTER FINISHER'S REPAIR KIT . . GET A $12.50 PORCELKIT FREE!

A new type heavy gauge steel chest, cantilever construction with leather handle. Contains 52 items (double the number of any other kit), includes $7.00 "N2 ELECTRO-KNIFE". To use with our famous LACSTIX. Also, includes our well known LUBRISOL, PAD-O-PAQUE PROCESS.

With each order for the MASTER FINISHER'S SUPREME SERVICE KIT at only $34.50 you will receive free of charge a $12.50 PORCELKIT, shown at left corner of illustration. It contains 21 items, including PORCELSTIX—THE PERFECT BURN-IN-STICKS TO REPAIR PORCELAIN.

LACSTIX are burn in sticks which do not shrink or swell under lacquer.

LUBRISOL PAD-O-PAQUE PROCESS enables anyone to make finishing repairs in ten minutes without instructions.

LIMITED OFFER—WRITE TODAY. Also INSTRUCTION CATALOGUE CARD BOOK on Finishing FREE for the asking. Write for it today.

Here's a picture of the MASTER FINISHER'S SUPREME SERVICE REPAIR KIT and Contents

FINISHINE LABORATORIES, Inc., SYRACUSE, N. Y.

not in demand for other purposes. We have adequate resources for such oils as linseed. Linseed oil and Congo copal or dammar may not make the best varnish, by our recently acquired modern standards, but, but they'll use 'em and like 'em, more and more.

There is lots of shellac in the country, but little available alcohol with which to cut it.—W. T. SMITH.

M. S. A. Opens New Canadian Headquarters

Greatly enlarging its field of service to Canadian industry, Mine Safety Appliances Co. of Canada, Ltd. announces acquisition of a new building conveniently located at 139 Kendal Ave., Toronto, Ontario, where a broad line of approved safety equipment will be quickly available in meeting the ever-growing requirements of the Dominion's industrial and mining enterprises.

The Canadian-managed and staffed subsidiary of Mine Safety Appliances Co. of Pittsburgh will conduct the manufacture and assembly of certain M. S. A. products while stocking all important items made by the parent company, which is the largest commercial producer of approved safety equipment in the world.

Well-known in the Canadian safety equipment field is the company's general manager, Mr. R. Morris, who will make his headquarters in Toronto.

Mine Safety Appliances Company of Canada, Ltd. operates district offices in Montreal, New Glasgow, and Sydney, Nova Scotia. The Company will directly serve all industries and mines in the Dominion from Manitoba to the Maritimes.

A new general catalogue of industrial safety equipment has just been prepared by this company. Copies may be obtained by writing direct to Mine Safety Appliances Co. of Canada, Ltd., 139 Kendal Ave., Toronto, or this publication.

Infra-Red Equipment and Service

Wm. J. Miskella announces that he now has an organization operating under the name of Infra-Red at 1633 E. Fortieth St., Cleveland, Ohio, which is specializing in the design, manufacture and installation of modern infra-red equipment.

The Appliance Division will offer, from time to time, completely engineered products refined to the last degree. One example is the Miskella infra-red dehydrator for the plastic industry, the pan type of which is already in production. Another example is the company's new photographic film dryer.

The Conveyor Division offers a new and novel means of handling work in process of painting, drying and so on, no matter what its form may be. Infra-veyor may also serve in many industrial applications which do not involve infra-red.

The Infra-red Equipment Division is in position to accept priority business covering complete and wired tunnels, strips, banks, clusters and so on, ranging from a reflector approxmating a half eggshell in actual size up to any type of reflector demanded, regardless of size. Mr. Miskella declares that "there seems to be no limit to the economy, flexibility and simplicity of our family of radically new co-ordinated infra-red elements."

Sherwin-Williams Adopts Returnable Drums

To conserve supplies of steel, the Sherwin-Williams Co., Cleveland, O., announces that effective immediately, returnable steel drums will be used on all shipments of industrial finishes, solvents, etc., instead of the single-trip containers formerly used. This change is in keeping with the company's policy of simplifying its entire packaging setup in an attempt to save metal for war production. Many intermediate sizes have been eliminated from the company's consumer line. The industrial division executives feel sure the company's customers will cooperate in this wartime conservation project, despite the extra book-keeping and handling work involved.

Soybean Oil Specifications

Copies of a proposed federal specification for soybean oil for use in paint and varnish, were sent to various technical magazines under date of January 14, 1942, by E. F. Hickson, Chairman of the Technical Committee on paint and Federal specifications for same. Any communications referring to this set of specifications should be addressed to Mr. Hickson, National Bureau of Standards, Washington, D. C.

"VICTORY" FINISHES

Army-Navy Aeronautical Specification
Nitrate Cellulose Lacquers, Dopes, Thinners and Primers

•

Quartermaster Corps
Olive Drab Synthetic Enamels

•

Type I or II
Black Acid-Proof Ammunition Paint

•

Wrinkle Finishes

•

WE HAVE THEM

Write or call us when in need of government specification material.

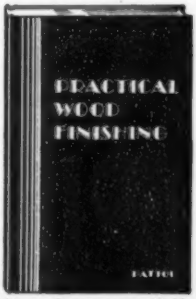
Industrial Division

SPEED-O-LAQ PRODUCTS COMPANY

ST. PAUL, MINNESOTA

PRACTICAL WOOD FINISHING

The Most Complete Handbook On Finishing Fine Woods Ever Written



Tells EVERYTHING you need to know about Wood Finishing. Includes types of unfinished furniture, choice of finishes, brushes, accessories, precautions, natural finishes, staining, filling and bleaching, varnish, enamel or paint finishes, finishing with a spray gun and many other fascinating practical subjects. Also includes complete section on furniture repairing and refinishing. Four pages of 32 different foreign and domestic woods illustrated in natural colors. 112 pages fully illustrated.

CLOTH, POSTPAID.....$1.25

INDUSTRIAL FINISHING

1142 N. Meridian St. Indianapolis, Ind.

BUYERS' CLASSIFIED DIRECTORY

Popular items manufactured by regular advertisers in Industrial Finishing, classified for ready reference.

ABRASIVES
M. L. Campbell Co.
Finishine Laboratories, Inc.
Minnesota Mining & Mfg. Co.
Star Chemical Co., Inc.

AIR HEATERS FOR OVENS
Despatch Oven Co.
George Koch Sons, Inc.

AIR COMPRESSORS
Binks Mfg. Co.
M. L. Campbell Co.
Crown Spray Gun Mfg. Co.
The DeVilbiss Co.
M. & E. Mfg. Co.

AIR SYSTEMS: FILTERED & CONDITIONED
American Air Filter Co.
R. C. Mahon Co.

BLEACHING MATERIALS
Advance Paint Co.
M. L. Campbell Co.
James B. Day & Co.
V. J. Dolan & Co., Inc.
E. I. duPont deNemours & Co., Inc. (R. & H. Chemicals Dept.)
Finishine Laboratories, Inc.
The Glidden Co.
Grand Rapids Wood Finishing Co.
R. N. Nason & Co.
New York Woodfinishers Supply Co.
Rockford Varnish Co.
The Schaefer Varnish Co.
Stille-Young Corp.
L. R. Van Allen & Co.

BRONZE POWDERS
Berry Brothers.
V. J. Dolan & Co., Inc.
E. I. duPont deNemours & Co., Inc.
Finishine Laboratories, Inc.
Grand Rapids Wood Finishing Co.
Hilo Varnish Corp.
Maas & Waldstein
Rockford Varnish Co.
Stanley Chemical Co.

BUFFING EQUIPMENT
Lea Mfg. Co.

BURNING-IN STICKS
V. J. Dolan & Co., Inc.
M. L. Campbell Co.
Finishine Laboratories, Inc.
James B. Day & Co.
Grand Rapids Wood Finishing Co.
Star Chemical Co., Inc.
Stille-Young Corp.
Universal Shellac Stick Co.

CENTRIFUGAL ENAMELING AND LACQUERING EQUIPMENT
Ronci Machine Co.
Stanley Chemical Co.

CLEANING COMPOUNDS
V. J. Dolan & Co., Inc.
Finishine Laboratories, Inc.
Minnesota Mining & Mfg. Co.
Star Chemical Co., Inc.

COATING MACHINES: BOMB AND SHELL
Binks Mfg. Co.
Crown Spray Gun Mfg. Co.
The DeVilbiss Co.
Eclipse Air Brush Co.
Chas. E. Francis Co.

CONVEYOR FINISHING SYSTEMS
R. C. Mahon Co.
Palmer-Bee Co.

DECALCOMANIES
Finishine Laboratories, Inc.
Photo-Stencil Engraving Co.

DEGREASING MACHINES
George Koch Sons, Inc.
The R. C. Mahon Co.

DIPPING MACHINES
Maas & Waldstein Co.
R. C. Mahon Co.

ENAMELS
Advance Paint Co.
Ault & Wiborg Corp.
Berry Brothers
Bristol Lacquer & Chemical Co.
M. L. Campbell Co.
The Clinton Co.
James B. Day & Co.
V. J. Dolan & Co., Inc.
E. I. duPont deNemours & Co., Inc.
Duralac Chemical Corp.
The Egyptian Lacquer Mfg. Co.
Ferro Enamel Corp.
Finishine Laboratories, Inc.
The Forbes Varnish Co.
The Glidden Co.
Grand Rapids Wood Finishing Co.
Hilo Varnish Corp.
Keystone Varnish Co.
Lilly Varnish Co.
Maas & Waldstein Co.
Martin Varnish Co.
R. N. Nason & Co.
New York Woodfinishers Supply Co.
Perfection Paint & Color Co.
Pittsburgh Plate Glass Co.
Reliance Varnish Co.
Randolph Finishing Products Co.

Rockford Varnish Co.
Roxalin Flexible Lacquer Co.
Monroe Sander Corp.
The Schaefer Varnish Co.
Southern Varnish Corp.
Speed-O-Lac Products Co.
Standard Industrial Products, Inc.
The Stanley Chemical Co.
Stille-Young Corp.
Thresher Varnish Co.
United Lacquer Mfg. Corp.
Varnish Products Co.
V. E. P. Company
H. V. Walker Co.
The Watson-Standard Co.
Yarnall Paint Co.
Zapon Division, Atlas Powder Co.

EXHAUST SYSTEMS

American Air Filter Co., Inc.
Binks Mfg. Co.
The DeVilbiss Co.
George Koch Sons, Inc.
The R. C. Mahon Co.
M. & E. Mfg. Co.

FILLERS: WOOD

Advance Paint Co.
Berry Brothers
M. L. Campbell Co.
The Clinton Co.
James B. Day & Co.
V. J. Dolan & Co., Inc.
E. I. duPont deNemours & Co., Inc.
The Egyptian Lacquer Mfg. Co.
Finishine Laboratories, Inc.
The Glidden Co.
Grand Rapids Wood Finishing Co.
Hilo Varnish Corp.
Lilly Varnish Co.
Maas & Waldstein Co.
Martin Varnish Co.
R. N. Nason & Co.
New York Woodfinishers Supply Co.
Pittsburgh Plate Glass Co.
Randolph Finishing Products Co.
Reliance Varnish Co.
Rockford Varnish Co.
The Schaefer Varnish Co.
Southern Varnish Corp.
Stanley Chemical Co.
Standard Industrial Products, Inc.
Star Chemical Co., Inc.
Stille-Young Corp.
Varnish Products Co.
The Watson-Standard Co.
Yarnall Paint Co.

FILTERS: SPRAY BOOTH

American Air Filter Co., Inc.

FLOCKS: COTTON, WOOL, RAYON

Claremont Waste Mfg. Co.
V. J. Dolan & Co., Inc.
Maas & Waldstein Co.
Rayon Processing Co. of R. I.
Rockford Varnish Co.
Zapon Division, Atlas Powder Co.

GRAINING EQUIPMENT

American Richwood Products Co.
Ault & Wiborg Corp.
Binks Mfg. Co.
Graining Roller Co.
Hansman Studio
George Koch Sons, Inc.
Reliance Varnish Co.
Standard Industrial Products, Inc.
The Watson-Standard Co.

HAND CREAMS: PROTECTIVE

DeVilbiss Co.
Doster & Co.
Mine Safety Appliances Co.

HOSE

Binks Mfg. Co.
Crown Spray Gun Mfg. Co.
The DeVilbiss Co.
M. & E. Mfg. Co.

INFRA-RED-RAY EQUIPMENT

North American Elec. Lamp Co.
Op-Al Elec. & Mfg. Co.

KNIFE HEATERS

M. L. Campbell Co.
Op-Al Elec. & Mfg. Co.
Star Chemical Co., Inc.

LACQUERS

Advance Paint Co.
Ault & Wiborg Corp.
Berry Brothers
Bristol Lacquer & Chemical Co.
M. L. Campbell Co.
The Clinton Co.
James B. Day & Co.
V. J. Dolan & Co., Inc.
E. I. duPont deNemours & Co., Inc.
Duralac Chemical Corp.
The Egyptian Lacquer Mfg. Co.
Finishine Laboratories, Inc.
The Forbes Varnish Co.
The Glidden Co.
Grand Rapids Wood Finishing Co.
Hilo Varnish Corp.
Lilly Varnish Co.
Maas & Waldstein Co.
Martin Varnish Co.
R. N. Nason & Co.
New York Woodfinishers Supply Co.
Pittsburgh Plate Glass Co.
Randolph Finishing Products Co.
Reliance Varnish Co.
Rockford Varnish Co.
Roxalin Flexible Lacquer Co.
Rudd Lacquer Corp.
Monroe Sander Corp.
The Schaefer Varnish Co.
Southern Varnish Corp.
Speed-O-Lac Products Co.
Standard Industrial Products, Inc.
The Stanley Chemical Co.
Star Chemical Co., Inc.
Stille-Young Corp.
United Lacquer Mfg. Corp.

SHELLAC ENAMEL

Made in gloss or flat. Has nearly twice solid content of lacquer—same drying speed. Excellent adhesion to all surfaces. Eliminates bleeding. Flat makes excellent base for lacquer or other enamels. Can be tinted any color. Write for sample and information.

M. L. Campbell Company

706 East 19th St. Kansas City, Mo.

GRAINING ROLLERS

That produce a clear, sharp print will enhance the quality of your work. Free from any design of their own, they reproduce your etched plate even in the minutest detail.

GRAINING ROLLER CO.
1121 Cavalry Ave., Detroit, Mich.

Write for FREE COLOR CARD

STICK SHELLAC

Unequalled for repairing damage to varnish, enameled or lacquered finish. Made in transparent and all wood and marble colors in both standard and lacquer grades.

M. L. Campbell Co.
706 East 19th St. Kansas City, Mo.

Varnish Products Co.
V. E. P. Company
H. V. Walker Co.
The Watson-Standard Co.
Zapon Division, Atlas Powder Co.

LACQUER HEATING EQUIPMENT

Binks Mfg. Co.
The DeVilbiss Co.

LACQUER STICKS

M. L. Campbell Co.
V. J. Dolan & Co., Inc.
Finishine Laboratories, Inc.
Grand Rapids Wood Finishing Co.
Rockford Varnish Co.
Roxalin Flexible Lacquer Co.
Star Chemical Co., Inc.
Universal Shellac Stick Co.

LAMPS: REFLECTORS

Binks Mfg. Co.
North American Elec. Lamp Co.
Op-Al Elec. & Mfg. Co.

MASKS: CANISTER & HOSE

Chicago Eye Shield Co.
Mine Safety Appliances Co.
Pulmosan Safety Equip. Corp.

MASKING TAPE

M. L. Campbell Co.
Finishine Laboratories, Inc.
Grand Rapids Wood Finishing Co.
Industrial Tape Corp.
Minnesota Mining & Mfg. Co.
The Watson-Standard Co.

MATERIAL PUMPS

Binks Mfg. Co.
The DeVilbiss Co.

METAL CLEANERS

E. I. duPont deNemours & Co., Inc. (R. & H. Chemicals Dept.)
The Enthone Co.
Finishine Laboratories, Inc.
Rockford Varnish Co.
Stille-Young Corp.

METAL WASHING MACHINES

R. C. Mahon Co.

MIXERS: FLUID & LIQUID

The DeVilbiss Co.
Eclipse Air Brush Co.
Chas. E. Francis Co.
Mixing Equipment Co., Inc.

OVENS: BAKING, DRYING

Despatch Oven Co.
Ferro Enamel Corp.
George Koch Sons, Inc.
The R. C. Mahon Co.

PEARL ESSENCE

V. J. Dolan & Co., Inc.
Mearl Corp.

POLISHING COMPOUNDS

Advance Paint Co.
V. J. Dolan & Co., Inc.
E. I. duPont deNemours & Co., Inc.
The Enthone Co.
The Glidden Co.
Grand Rapids Wood Finishing Co.
Lea Mfg. Co.
Minnesota Mining & Mfg. Co.
Rockford Varnish Co.
Southern Varnish Corp.
Standard Industrial Products, Inc.
L. R. van Allen Co.

POLISHING EQUIPMENT

Finishine Laboratories, Inc.
Lea Mfg. Co.
Star Chemical Co., Inc.

PRIMERS

Advance Paint Co.
Ault & Wiborg Corp.
Berry Brothers
Bristol Lacquer & Chemical Co.
M. L. Campbell Co.
The Clinton Co.
James B. Day & Co.
V. J. Dolan & Co.
E. I. duPont deNemours & Co.
Duralac Chemical Corp.
The Egyptian Lacquer Mfg. Co.
The Forbes Varnish Co.
The Glidden Co.
Hilo Varnish Corp.
Lilly Varnish Co.
Maas & Waldstein
Martin Varnish Co.
R. N. Nason & Co.
Perfection Paint & Color Co.
Pittsburgh Plate Glass Co.
Randolph Finishing Products Co.
Reliance Varnish Co.
Rockford Varnish Co.

Roxalin Flexible Lacquer Co.
Monroe Sander Corp.
The Schaefer Varnish Co.
Southern Varnish Corp.
Speed-O-Lac Products Co.
Standard Industrial Products, Inc.
The Stanley Chemical Co.
Stille-Young Corp.
United Lacquer Mfg. Corp.
V. E. P. Company
H. V. Walker Co.
The Watson-Standard Co.
Yarnall Paint Co.
Zapon Division, Atlas Powder Co.

PUMPS: MATERIAL

Binks Mfg. Co.
DeVilbiss Co.

REMOVERS: ENAMEL, PAINT, LACQUER, VARNISH

Industrial Chemical Development Corp.
Wilson-Imperial Co.

RESPIRATORS: PAINT & DUST

Chicago Eye Shield Co.
Crown Spray Gun Mfg. Co.
Binks Mfg. Co.
DeVilbiss Mfg. Co.
Finishine Laboratories, Inc.
Mine Safety Appliances Co.
Pulmosan Safety Equip. Corp.

ROLLER COATING MACHINES

Chas. E. Francis Co.
Reliance Varnish Co.

RUBBING MACHINES

Detroit Surfacing Mach. Co.
Sterling Tool Products Co.
Sunstrand Machine Tool Co.

Read the General Equipment Review Section Beginning Page 20

RUST PROOFING PROCESSES

The Enthone Co.
George Koch Sons, Inc.
The R. C. Mahon Co.
Watson-Standard Co.

SANDING MACHINES

Detroit Surfacing Mach. Co.
Sterling Tool Products Co.
Sunstrand Machine Tool Co.

SEALERS: WOOD

Advance Paint Co.
Berry Brothers
Bristol Lacquer & Chemical Co.
M. L. Campbell Co.
The Clinton Co.
James B. Day & Co.
V. J. Dolan & Co., Inc.
E. I. duPont deNemours & Co.
Duralac Chemical Corp.
The Egyptian Lacquer Mfg. Co.
Finishine Laboratories, Inc.
The Forbes Varnish Co.
The Glidden Co.
Grand Rapids Wood Finishing Co.
Hilo Varnish Corp.
Lilly Varnish Co.
Maas & Waldstein Co.
Martin Varnish Co.
Minnesota Mining & Mfg. Co.
R. N. Nason & Co.
New York Woodfinishers Supply Co.
Perfection Paint & Color Co.
Pittsburgh Plate Glass Co.
Randolph Finishing Products Co.
Reliance Varnish Co.
Rockford Varnish Co.
Roxalin Flexible Lacquer Co.
Rudd Lacquer Corp.
Monroe Sander Corp.
The Schaefer Varnish Co.
Southern Varnish Corp.
Speed-O-Lac Products Co.
Standard Industrial Products, Inc.
The Stanley Chemical Co.
Star Chemical Co., Inc.
Stille-Young Corp.
United Lacquer Mfg. Corp.
Varnish Products Co.
H. V. Walker Co.
The Watson-Standard Co.
Yarnall Paint Co.
Zapon Division, Atlas Powder Co.

SHELLAC

Advance Paint Co.
Berry Brothers
M. L. Campbell Co.
The Clinton Co.
James B. Day & Co.
Finishine Laboratories, Inc.
The Glidden Co.
Grand Rapids Wood Finishing Co.
Hilo Varnish Corp.
R. N. Nason & Co.
New York Woodfinishers Supply Co.
Pittsburgh Plate Glass Co.
Rockford Varnish Co.
Rudd Lacquer Corp.
Southern Varnish Corp.
Stille-Young Corp.
Star Chemical Co., Inc.
The Watson-Standard Co.
Yarnall Paint Co.

SHELLAC STICKS

M. L. Campbell Co.
James B. Day & Co.
V. J. Dolan & Co., Inc.
Finishine Laboratories, Inc.
Grand Rapids Wood Finishing Co.
Rockford Varnish Co.
Star Chemical Co., Inc.
Stille-Young Corp.
Universal Shellac Stick Co.

SKIN CLEANSERS: GRANULATED

G. H. Packwood Mfg. Co.

SKIN CREAMS: PROTECTIVE

Doster & Co.

STAINS

Advance Paint Co.
Berry Brothers
M. L. Campbell Co.
The Clinton Co.
James B. Day & Co.
V. J. Dolan & Co., Inc.
E. I. duPont deNemours & Co.

WE RECOVER YOUR
SOLVENTS & THINNERS
from . Sludge . Waste . Wash . Spoiled Lacquers, etc.
Each customer's shipment, whether one drum or a carload receives PROPER and SEPARATE TREATMENT. Write to:—
SOLVENTS RECOVERY SERVICE
Lister Ave. & Brown St., Newark, N. J.
or
HAMMOND CHEMICAL SERVICE,
241 Brunswick St., Hammond, Ind.

Blanchit
REG. U. S. PAT. OFF.
ATTENTION!
Cheaper Housing Finishes
Light Interiors and Furniture without Paint or Enamel
L. R. van ALLEN COMPANY
(Patent Licensee)
406 N. WELLS ST. CHICAGO

The Egyptian Lacquer Mfg. Co.
Finishine Laboratories, Inc.
The Glidden Co.
Grand Rapids Wood Finishing Co.
Hilo Varnish Corp.
Lilly Varnish Co.
Maas & Waldstein Co.
Martin Varnish Co.
R. N. Nason & Co.
New York Woodfinishers Supply Co.
Perfection Paint & Color Co.
Pittsburgh Plate Glass Co.
Randolph Finishing Products Co.
Reliance Varnish Co.
Rockford Varnish Co.
Rudd Lacquer Corp.
The Schaefer Varnish Co.
Southern Varnish Corp.
Star Chemical Co., Inc.
Stille-Young Corp.
Varnish Products Co.
The Watson-Standard Co.
Yarnall Paint Co.
Zapon Division, Atlas Powder Co.

STENCILS: SILK SCREEN and PHOTOGRAPHIC

American Richwood Products Co.
Hanaman Studio
Photo-Stencil Engraving Co.
Rayon Processing Co. of R. I.
Reliance Varnish Co.

STRIPING TOOLS

Beugler Mfg. Co.
The DeVilbiss Co.
Finishine Laboratories, Inc.
M. & E. Mfg. Co.

STRIPPERS: BAKED ENAMEL

The Enthone Co.
Lea Mfg. Co.

SOLVENTS AND THINNERS

Advance Paint Co.
Ault & Wiborg Corp.
Berry Brothers
Bristol Lacquer & Chemical Co.
M. L. Campbell Co.
The Clinton Co.
James B. Day & Co.
V. J. Dolan & Co., Inc.
E. I. duPont deNemours & Co.
Duralac Chemical Corp.
Hammond Chemical Service
The Egyptian Lacquer Mfg. Co.
The Glidden Co.
Hilo Varnish Corp.
Lilly Varnish Co.
Maas & Waldstein Co.
R. N. Nason & Co.
New York Woodfinishers Supply Co.
Pittsburgh Plate Glass Co.
Randolph Finishing Products Co.
Reliance Varnish Co.
Rockford Varnish Co.
Roxalin Flexible Lacquer Co.
Rudd Lacquer Corp.
Monroe Sander Corp.
Solvents Recovery Service, Inc.
Speed-O-Lac Products Co.
Standard Industrial Products, Inc.
The Stanley Chemical Co.
Star Chemical Co., Inc.
Stille-Young Corp.
United Lacquer Mfg. Corp.
H. V. Walker Co.
The Watson-Standard Co.
Yarnall Paint Co.
Zapon Division, Atlas Powder Co.

SPRAY PAINTING EQUIPMENT

American Air Filter Co.
Binks Mfg. Co.
M. L. Campbell Co.
Crown Spray Gun Mfg. Co.
The DeVilbiss Co.
Finishine Laboratories, Inc.
Industrial Tape Corp.
The R. C. Mahon Co.
M. & E. Mfg. Co.
The Alex. Milburn Co.

STICK SHELLAC

M. L. Campbell Co.
James B. Day & Co.
V. J. Dolan & Co., Inc.
Finishine Laboratories, Inc.
Grand Rapids Wood Finishing Co.
Rockford Varnish Co.
Star Chemical Co., Inc.
Stille-Young Corp.
Universal Shellac Stick Co.

SYNTHETICS

Advance Paint Co.
Berry Brothers
Bristol Lacquer & Chemical Co.
M. L. Campbell Co.
The Clinton Co.
James B. Day & Co.
V. J. Dolan & Co., Inc.
Duralac Chemical Corp.

E. I. duPont deNemours & Co.
The Egyptian Lacquer Mfg. Co.
Ferro Enamel Corp.
Finishine Laboratories, Inc.
The Forbes Varnish Co.
Hilo Varnish Corp.
Lilly Varnish Co.
Maas & Waldstein Co.
Martin Varnish Co.
R. N. Nason & Co.
New York Woodfinishers Supply Co.
Perfection Paint & Color Co.
Pittsburgh Plate Glass Co.
Randolph Finishing Products Co.
Reliance Varnish Co.
Rockford Varnish Co.
Roxalin Flexible Lacquer Co.
Rudd Lacquer Corp.
Monroe Sander Corp.
The Schaefer Varnish Co.
Southern Varnish Corp.
Speed-O-Lag Products Co.
Standard Industrial Products, Inc.
The Stanley Chemical Co.
Stille-Young Corp.
United Lacquer Mfg. Corp.
Varnish Products Co.
V. E. P. Company
H. V. Walker Co.
Yarnall Paint Co.
Zapon Division, Atlas Powder Co.

TACK RAGS

Star Chemical Co., Inc.

VARNISHES

Advance Paint Co.
Ault & Wiborg Corp.
Berry Brothers
M. L. Campbell Co.
The Clinton Co.
E. I. duPont deNemours & Co.
Duralac Chemical Corp.
The Egyptian Lacquer Mfg. Co.
Finishine Laboratories, Inc.
The Forbes Varnish Co.
The Glidden Co.
Grand Rapids Wood Finishing Co.
Hilo Varnish Corp.
Keystone Varnish Co.
Lilly Varnish Co.
Maas & Waldstein Co.
Martin Varnish Co.
R. N. Nason & Co.
New York Woodfinishers Supply Co.
Pittsburgh Plate Glass Co.
Perfection Paint & Color Co.
Reliance Varnish Co.
Rockford Varnish Co.
Monroe Sander Corp.
The Schaefer Varnish Co.
Southern Varnish Corp.
Speed-O-Lag Products Co.
Standard Industrial Products, Inc.
Star Chemical Co., Inc.
Stille-Young Corp.
Thresher Varnish Co.
Varnish Products Co.
V. E. P. Company
H. V. Walker Co.
The Watson-Standard Co.
Yarnall Paint Co.
Zapon Division—Atlas Powder Co.

WASHERS: METAL

R. C. Mahon Co.

WOOD GRAINING PRESSES

American Richwood Products Co.
Ault & Wiborg Corp.
Reliance Varnish Co.

Classified Advertising

Rate: 45 cents per line per insertion—minimum $1.35

POSITION DESIRED

By foreman finisher with 17 years experience. Can handle men and obtain production at least cost. Can make money for chair or bed-room furniture manufacturer. Temperate. Address IF-878, Industrial Finishing.

FOR SALE

One Swartwout Tunnel Type Drying Oven, demountable metal panel construction, 3" Rockwool insulation.
Length 120'6", width 11'6", Height 6'9".
2 drag chain conveyors (operated by one motor).
2 indirect oil fired 500,000 B.T.U. heaters per hour.
1 Input motor driven fan.
1 recirculating motor driven fan.
1 exhaust motor driven fan.
Maximum oven temperature 325°F.
Pair of swing doors at each end.
One lift door at each end 8' from end of oven with one electric hoist to lift both doors.
Complete set of temperature controls and recording thermometer.
Complete set of electric controls for all motors.

May be seen at METAL DOOR & TRIM CO., LAPORTE, INDIANA.

FOR SALE

One Rolling Machine:
10 Stands rolls.
2¾" roll shaft diameter.
Maximum distance between housings 22".
Maximum diameter of rolls 12½".
RPM of rolls (variable) 5 to 15.
Overall length (includes straightening rolls) 29'6".
Overall width 5'6" (does not include motor).
Overall height 4'6".
Motor 50 H.P. 860 RPM 440 volts 3 phase 60 cycle.
Drum switch and resistance bank for variable speed.
Approximate weight 50,000 lbs.
Maximum thickness of material that can be rolled on this machine, ⅛".

May be seen at METAL DOOR & TRIM CO., LAPORTE, INDIANA.

Index to Advertisers

Advance Paint Co. ..... Front Cover
American Air Filter Co. 1
American Red Cross 107
American Richwood Products Co. 103
Ault & Wiborg Corp. 59

Berry Brothers 89
Binks Mfg. Co. 33-34-35-36
Bristol Lacquer & Chemical Co. 105

Campbell Co., M. L. 111-115-116
Chicago Eye Shield Co. 101
Claremont Waste Mfg. Co. 7
Classified Advertising 119
Crown Spray Gun Mfg. Co. 105

Day & Co., James B. 85
Despatch Oven Co. 98
DeVilbiss Co., The 70-71
Dolan & Company, V. J. 5
duPont deNemours & Co., E. I. 60-61
Duralac Chemical Co. 8

Eclipse Air Brush Co. 101

Finishine Laboratories, Inc. 112

Glidden Co., The 67
Graining Roller Co. 116

Hammond Chemical Service 118
Hilo Varnish Corp. 79

Industrial Chemical Development Corp. 95

Koch Sons, Inc., George 6

Lea Manufacturing Co. ..... Third Cover
Lilly Varnish Co. 10-11

Mahon Co., The R. C. 72
Martin Varnish Co. 111
Mearl Corporation, The 69
Milburn Co., The Alexander 91
Mine Safety Appliances Co. 103
Mixing Equipment Co. 97

Nason & Co., R. N. 65
Neilson Chemical Co. 100
New York Woodfinishers Supply Co. 99

Op-Al Elec. & Mfg. Co. 107

Packwood Mfg. Co., G. H. 102
Palmer-Bee Co. 87
Pittsburgh Plate Glass Co. 12-13
Pulmosan Safety Equipment Corp. 98

Randolph Finishing Products Co. 81
Rayon Processing Co. 106
Reliance Varnish Co. 75
Rockford Varnish Co. 77
Ronci Machine Co. 6
Roxalin Flexible Lacquer Co. ..... Second Cover

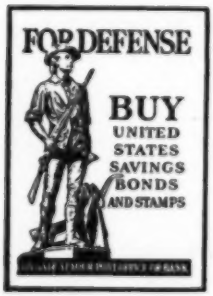
Schaefer Varnish Co., The 96
Solvents Recovery Service 118
Southern Varnish Corp. ..... Back Cover
Speed-O-Laq Products Co. 113
Stille-Young Corp. 9

United Lacquer Mfg. Corp. 6

vanAllen Company, L. R. 118
Varnish Products Co. 94

Walker Co., H. V. 83
Wilson-Imperial Co. 87

Zapon Division—Atlas Powder Co. 2

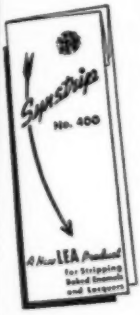


"We read every page. Excellent magazine."—Remo Mfg. Co., Meriden, Conn.

"Your book is an inspiration to me."—L. G. Farmer, High Point, N. C.

"Industrial Finishing is the most useful magazine in the finishing field today and I can't see how any factory owner or finisher could get along without it."—H. H. Webster, Salt Lake City, Utah.

We are in a position to supply this excellent stripping solution, even in large quantities. At the present time there is no priority affecting the raw materials.



LEA Synstrip is a liquid synthetic enamel stripper made especially for baked enamels such as the Glyptal and Urea Formaldehyde types, also many air dried finishes. It is fast and clean-working, leaving the metal surface in its original condition. The article can be rinsed with water, dried, and immediately re-finished.

LEA Synstrip does not corrode, etch or stain Aluminum, Brass or any other metals. It can be used at room temperature, but operation at 160° F. and higher is preferable.

Shipped in 1 or 5-gallon cans; 50-gallon drums.

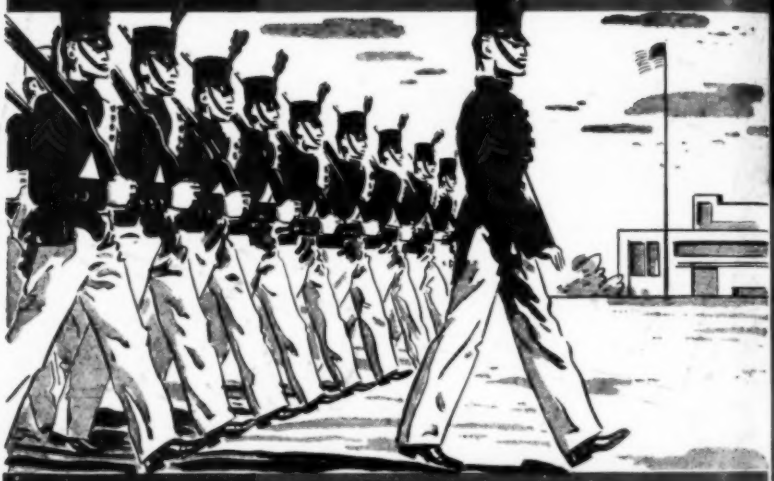
I-LM-

THE LEA MANUFACTURING COMPANY

WATERBURY, CONN.

Specialists in the Production of Clean-Working Buffing and Polishing Compounds

UNIFORMITY



SYNTHETONE
LACQUERS
VARNISHES
SYNTHETIC FILLERS
SOVATONE STAINS (NGR)
UNDERCOATS
PAINTS • ENAMELS
WIPE-RITE STAINS
SPRAY-RITE STAINS

REFLECT QUALITY
SOUTHERN PRODUCTS

If you have a finishing problem, our technical staff will gladly help you solve it.

From start to finish . . . every step in the manufacture of Southern Varnish Corporation products is controlled with scientific precision. Result: Southern Varnish Corporation finishes are always dependable and UNIFORM.

SOUTHERN
VARNISH CORPORATION
Roanoke, Virginia